Title: Name That Tune!

Brief Overview:

In this unit the students will be able to take a whole and divide it into fractional parts, equivalent fractions, and compare fractions. Also, students will design and construct a musical score using fractions.

Links to NCTM Standards:

- **Mathematics as Problem Solving**
  Students will demonstrate their ability to solve problems in a cooperative atmosphere.

- **Mathematics as Communication**
  Students will demonstrate their ability to communicate mathematically. They will read, write, and discuss mathematics with language and the signs, symbols, and terms of the discipline.

- **Mathematics as Reasoning**
  Students will demonstrate their ability to reason mathematically.

- **Mathematical Connections**
  Students will demonstrate their ability to connect mathematics topics within the discipline and with other discipline.

- **Number Concepts and Relationships**
  Students will demonstrate their ability to describe and apply number relationships using concrete and abstract materials. They will choose appropriate operations and describe effects of operations on numbers.

- **Fractions and Decimals**
  Students will demonstrate their ability to perform fractional operations and will be able to model fractional concepts using concrete materials.

- **Statistics**
  Students will demonstrate their ability to organize and display data and will interpret information obtained from displays.

Grade/Level:

Grades 3-5

Duration/Length:

10 - 20 class sessions (variable)

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

- Recognizing fractions as part of a whole
- Comparing fractions (greater than, less than, and equal to signs)
- Dividing words into syllables
- Identifying multiples of numbers
- Constructing problems with common fractions
- Identifying and using rules for writing an acrostic poem
- Adding and subtracting basic facts

Objectives:

Students will:

- work cooperatively with partners and in groups.
- demonstrate fractional parts of a whole by using manipulatives.
- identify equivalent fractions.
- compare musical notes to fractions.
- write Fraction Haiku poems using fractional terms.
- read and write an original musical score.
- present and demonstrate an original musical score.
- evaluate their thinking/learning by utilizing math terms in their journal entries.
- add and subtract fractions with like denominators.
- design and construct a vertical graph using musical score.

Materials/Resources:

- KWL chart about fractions
- 3x2 cards for the word wall
- Book: **The Bremen Town Musicians** as retold by Donna Diamond
- Construction paper
- Markers
- Chalk
- Fraction pieces
- Lined musical staff paper
- Blank musical staffs (one per student)
- Fractional circle pieces
- Fractional builders

- Crayons
- Scissors
- Reflection journals (one per student)
- Rubric for writing an acrostic poem
- Student Resource Sheets 1 and 2 - Note Your Fractions
- Student Resource Sheet 3 - Name That Tune Puzzle
- Student Resource Sheet 4 - Who Has My Equivalent Note?
- Student Resource Sheet 5 - Comparing Key Notes
- Student Resource Sheet 6 - Musical Key
- Student Resource Sheet 7 - Key Notes
- Student Resource Sheet 8 - Fraction Haiku Poem
- Student Resource Sheet 9 - Fraction Haiku Graph
- Dictionaries
- Musical staff and chart
- Teacher Resources and Answer Keys
- Name That Tune Rubric
- Name That Tune Multiplication Chart

Development/Procedures:

Students will spend approximately 1-2 days on each activity within this unit.

Activity 1:

Note Your Fractions!

- Teacher will read the story: "The Bremen Town Musicians" retold by Donna Diamond.
- Discuss story. Use the following questions:
  1. Why were the animals looking for new jobs?
  2. Name or identify each animal's new job/occupation.
- Tell students they will demonstrate fractional parts and design and create a model of a musical score by the end of the unit.
- Teacher will demonstrate and model folding a square piece of paper into halves, fourths, eighths, and sixteenths.
- Have students work cooperatively in groups to identify fractional numbers by using fractional circles.
- Assign Student Resource Sheets 1 and 2.

Activity 2:

Name That Tune

- Teacher uses overhead of multiplication chart to demonstrate and model the relationship between multiple of numbers and equivalent fractions.
- Teacher using musical puzzle pieces will model equivalent fractions before assigning Student Resource Sheet 3 which will be completed in cooperative pairs.
- Teacher assigns follow-up activity: students will illustrate and write five pairs of equivalent fractions in math journals.

Activity 3:

Who Has My Equivalent Note?

- The teacher models and explains directions before students work (in small groups/whole class) independently to complete the activity. Students will identify equivalent fractions using Student Resource Sheet 4.
- Student will show and read fractional number on his musical note shaped card, then ask members in his group, "Who has my equivalent note?" The student with the correct answer will read the equivalent fraction which is on the back of his musical note shaped card. Afterwards, the student will show and read the fractional number on the front of his musical note shaped card, then ask "Who has my equivalent note?" Repeat activity until everyone has responded.

Activity 4:

Comparing Keynotes!

- Using overhead and fractional pieces, the teacher will model comparison of fractions by using greater than, less than, and equal to symbols.
- Students will work independently or in small groups to complete Student Resource Sheet 5.

Activity 5:

Addition and Subtraction

- Using the overhead projector, the teacher will use fractional circles to model addition and subtraction of fractions.
- Teacher will model addition as follows: Show: $1/6 + 2/6 = 3/6 = 1/2$.
- Teacher will demonstrate subtraction as follows: $3/4 - 1/4 = 2/4 = 1/2$.
- Students will add and subtraction fractions by using fractional circles to complete problems on Student Resource Sheet 7.

Activity 6:

Haiku Poem

- Teacher models and writes a Haiku poem with the class. Teacher explains that Haiku is a Japanese poem with three lines that uses the following pattern: line one has five syllables, line two has seven syllables, and line three has five syllables. (Syllabication has been taught in a previous language arts lesson.)

- Teacher shares the following Haiku poem with class:

<u>Fraction Haiku</u>

Fractions Are Numbers
Like One Half, One Fourth, One Eighth
They are all around.

- Students must use at least three or more two syllable words in their Fraction poem. The poem's topic is fractions.
- Students will work independently to write their own original Fraction Haiku poem using Student Resource 8.
- Students will count syllables in each word and follow the chart below:
  If a word has one syllable, then use a whole note (1)
  If a word has two syllables, then use a half note (1/2)
  If a word has three syllables, then use two quarter notes (1/4) and one half (1/2) note.
  If a word has four syllables, then use four quarter notes (1/4).
- Students will draw musical notes under each word in Fraction Haiku poem and write a fraction number sentence under each word. Refer to example below:

A - MA - ZING FRAC - TIONS

0 0 0 0 0
1/2 + 1/4 + 1/4 = 1 1/2 + 1/2 = 1

Activity 7:

Beat By Beat!

- The teacher reviews musical terms and demonstrate how to use musical staff and chart with students before assigning Student Resource Sheet 6. Using musical charts as a guide, students will create an original musical score in 4/4 meter. Students will use hands to clap out the melody of their musical score and then may use any other musical instrument to augment the melody of their musical score.

Activity 8:

Fraction Haiku Poem Graph

- Using teacher's original Fraction Haiku Poem, the teacher will demonstrate how to graph Fraction Haiku Poems by counting musical notes and their frequency.
- Students will use Student Resource Sheet 9 to graph their original Haiku Poems by counting the frequency of musical notes used in their musical score.

Activity 9:

Noting Addition and Subtraction

- The teacher will demonstrate how to add and subtract fractions by using musical notes and fractional pieces as follows:
  Show: a quarter note plus a quarter note equals a half note.
  (1/4 note + 1/4 note = 1/2 note)
  Show: a half note plus a half note equals a whole note.
  (1/2 note + 1/2 note = 1 whole note)
  Show: three quarter notes minus one quarter note equals two quarters or one half note.
  (3/4 note - 1/4 note = 2/4 note or 1/2 note)
- Students will use musical chart and fractional pieces to work independently to solve musical notes addition and subtraction problems on Student Resource Sheet 7.

Activity 10:

Star Search!

- Students will present and demonstrate their original Fraction Haiku poems accompanied by their original musical score to their classmates and other classes.
- Students will use a variety of musical aids in performing their original musical score.
- Once the song is written, the student will write a number sentence for each measure in the song.

Performance Assessment:

- The teacher will continuously observe and monitor students progress during individual and small group activities throughout this unit.
- The teacher will use a Rubric for the Name That Tune project.
- The teacher will display completed graphs and poems on the class or hall Bulletin Board (Graphs and poems may also be used as a learning center.)

Daily Reflective Journal Question

- Students will explain what they have learned each day in their Math Journals.

Extension/Follow Up:

- Share original Fraction Haiku Poems and musical scores with other classes.
- Write business letters to record companies inquiring about record promotions and careers in the music field.
- Create a bulletin board using addition and subtraction of musical notes: whole notes, half notes, quarter notes, and eighth notes.
- Students visit a supermarket and/or food section of a newspaper and purchase various items. (Also, a classroom store could be used to implement these activities if access to a supermarket is unavailable.)

  Example 1: You purchase 16 bananas and share 1/4 of them with a friend. How many bananas will your friend receive?
  Example 2: You purchase 12 apples and share 1/2 of them with a friend. How many apples will your friend receive?

Authors:

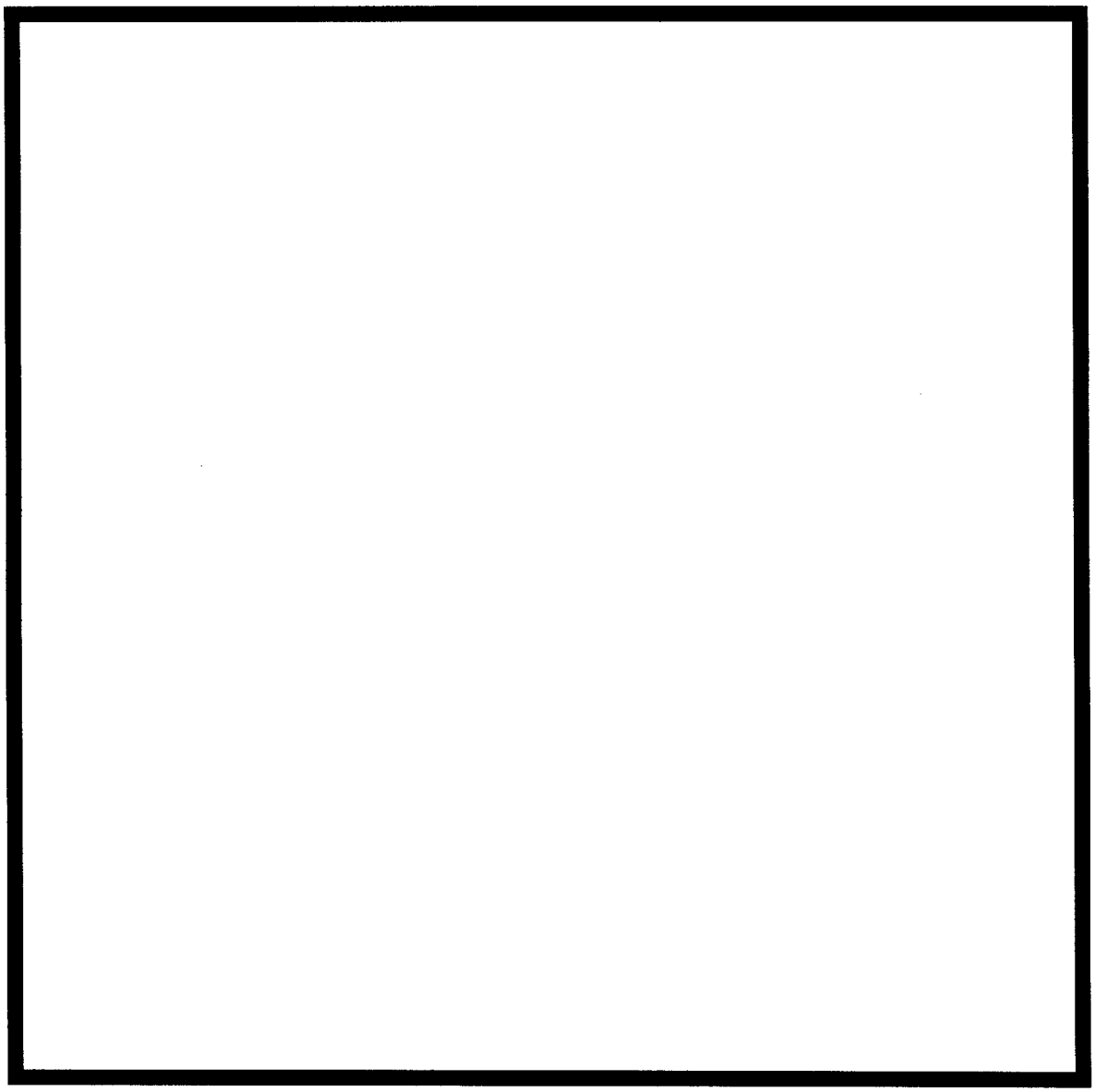
Loretta H. Miller
Kenilworth Elementary School
Washington, DC

Cloteen Lee
Calcott Elementary School
Norfolk, Virginia

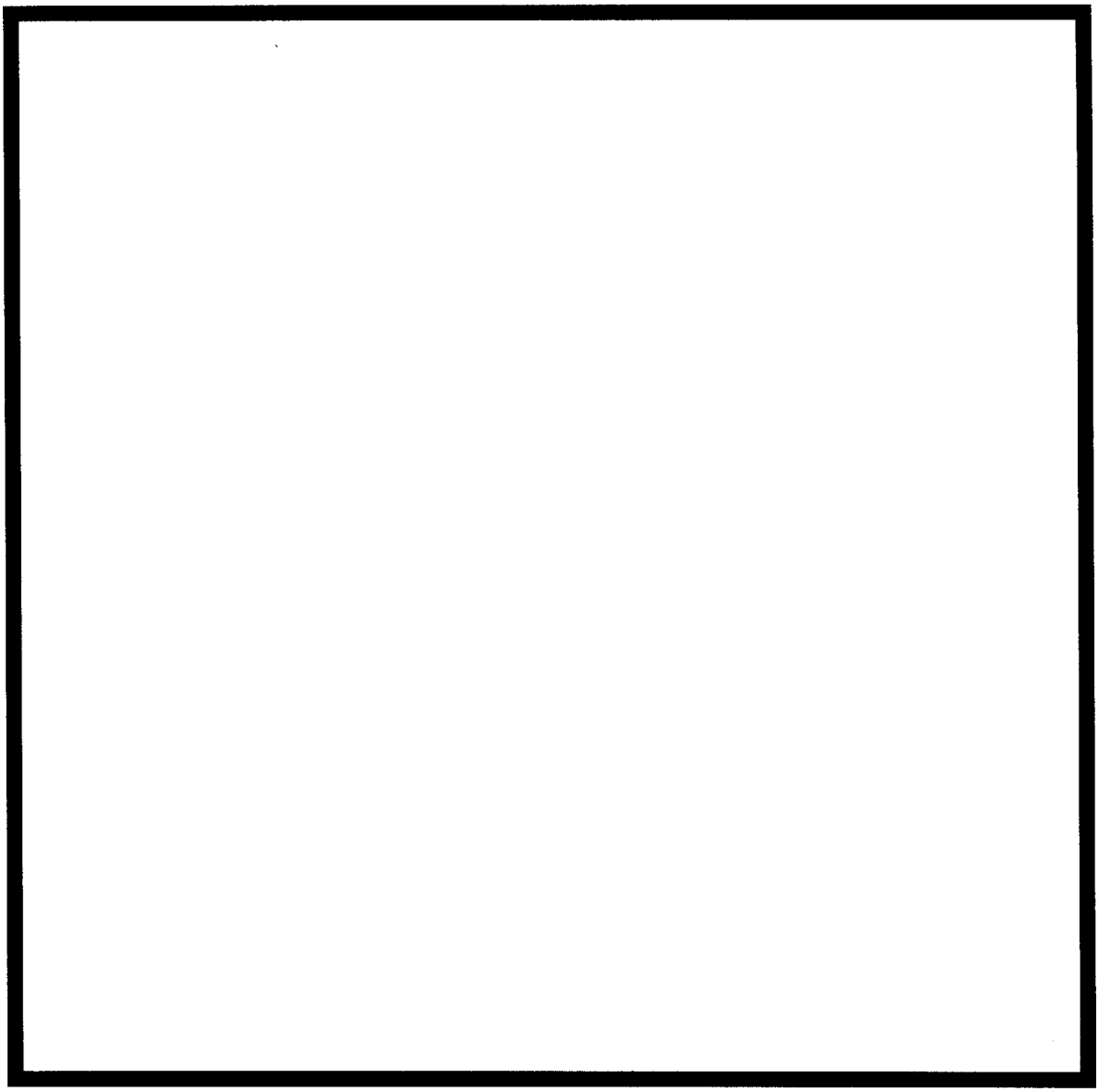
RUBRIC FOR NAME THAT TUNE

4 POINTS	-Uses at least three fractional terms in poem. -Uses three descriptive words. -Uses an original musical score. -Spells all words correctly. -Uses correct form. -Uses musical notation well -Has a clear and well organized presentation -Writes a number sentence for each measure of their song with 90% accuracy.
3 POINTS	-Uses at least two fractional terms. -Uses two descriptive words -Uses an original musical score with teacher guidance. -Spells most words correctly. -Uses good form. -Has good musical notation. -Has a clear oral presentation. -Writes a number sentence for each measure of their song with 80% accuracy.
2 POINTS	-Uses at least one fractional term. -Uses one descriptive word. -Use a musical score. -Spells some words correctly. -Gives an oral presentation -Writes a number sentence for each measure of their song with 70% accuracy.
1 POINT	-Has no fractional terms. -Has no evidence of organization. -Presentation is unclear. -Writes a number sentence for each measure of their song with less than 70% accuracy.
0 POINT	-No response is given. -Has no presentation. -No attempt was made to write number sentence.

fold a fraction



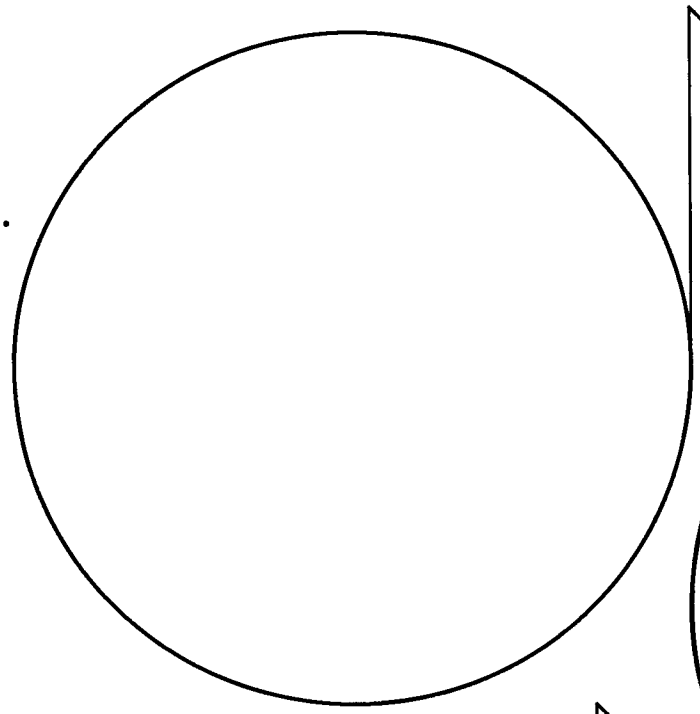
fold a fraction



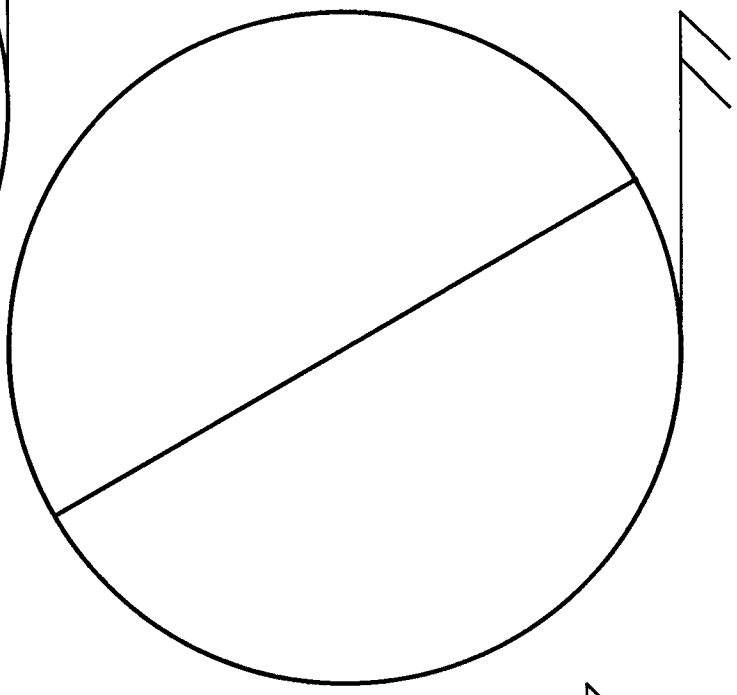
Note Your Fractions! Student Resource #1

Shade in one part of each note. Then use fractional circle pieces to model each note.

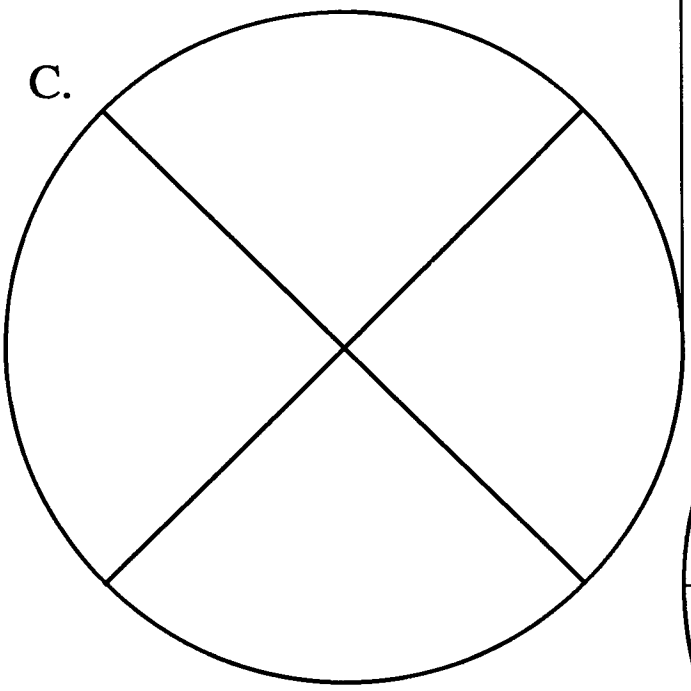
A.



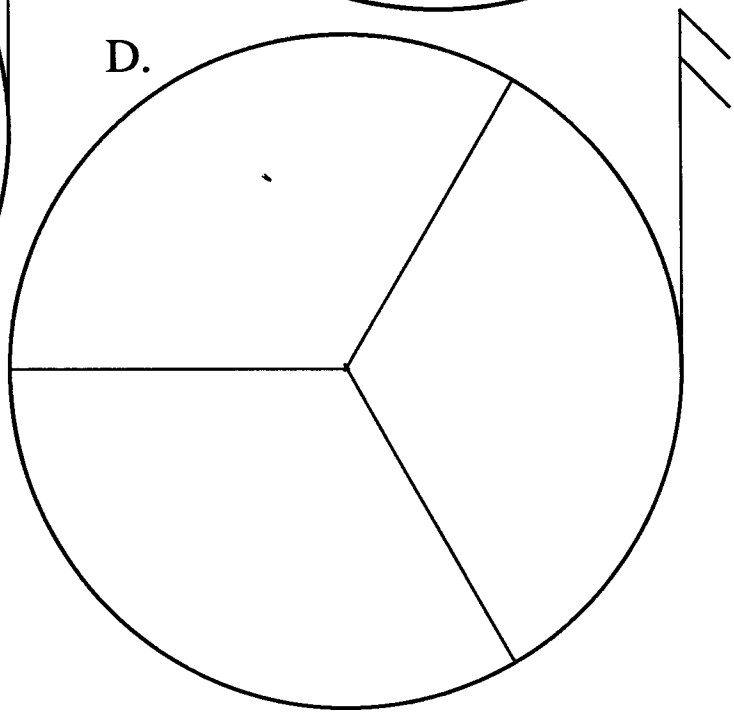
B.



C.



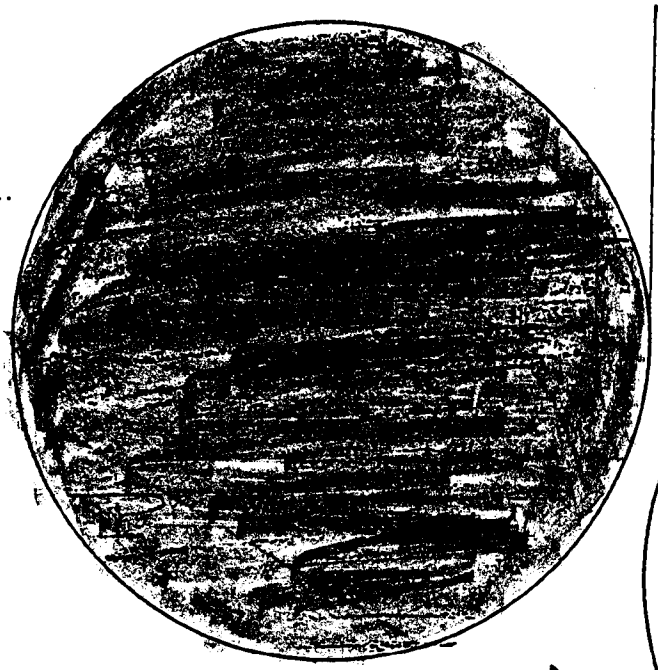
D.



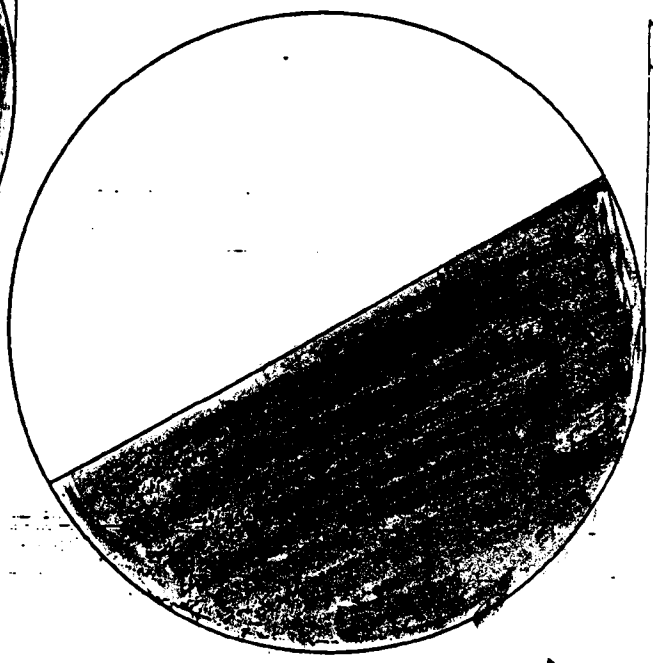
Note Your Fractions! Teacher Resource #1

Shade in one part of each note. Then use fractional circle pieces to model each note.

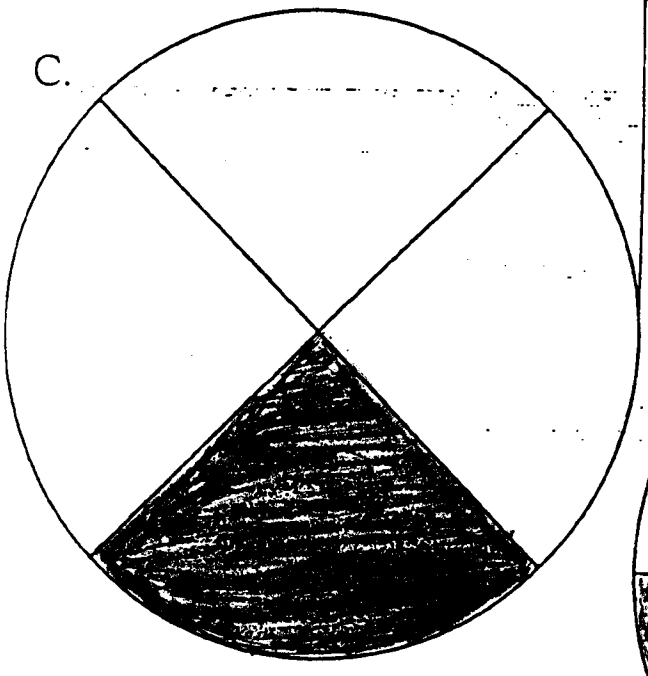
A.



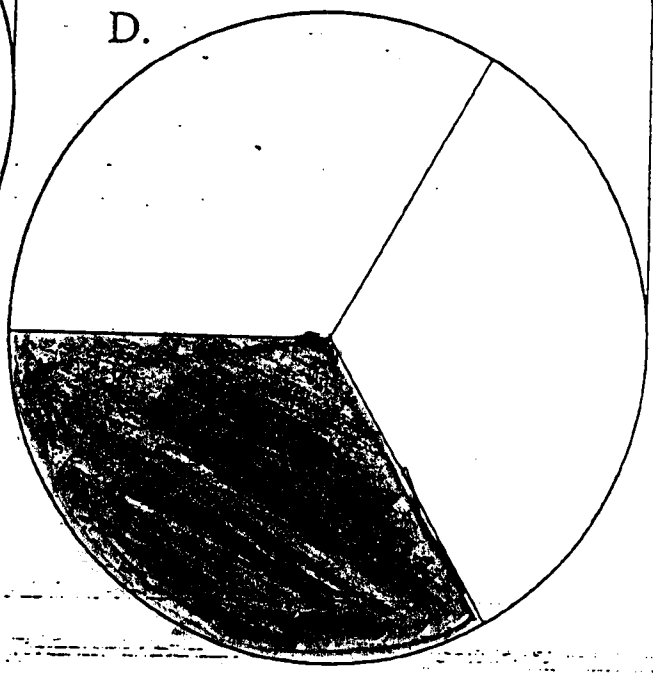
B.



C.

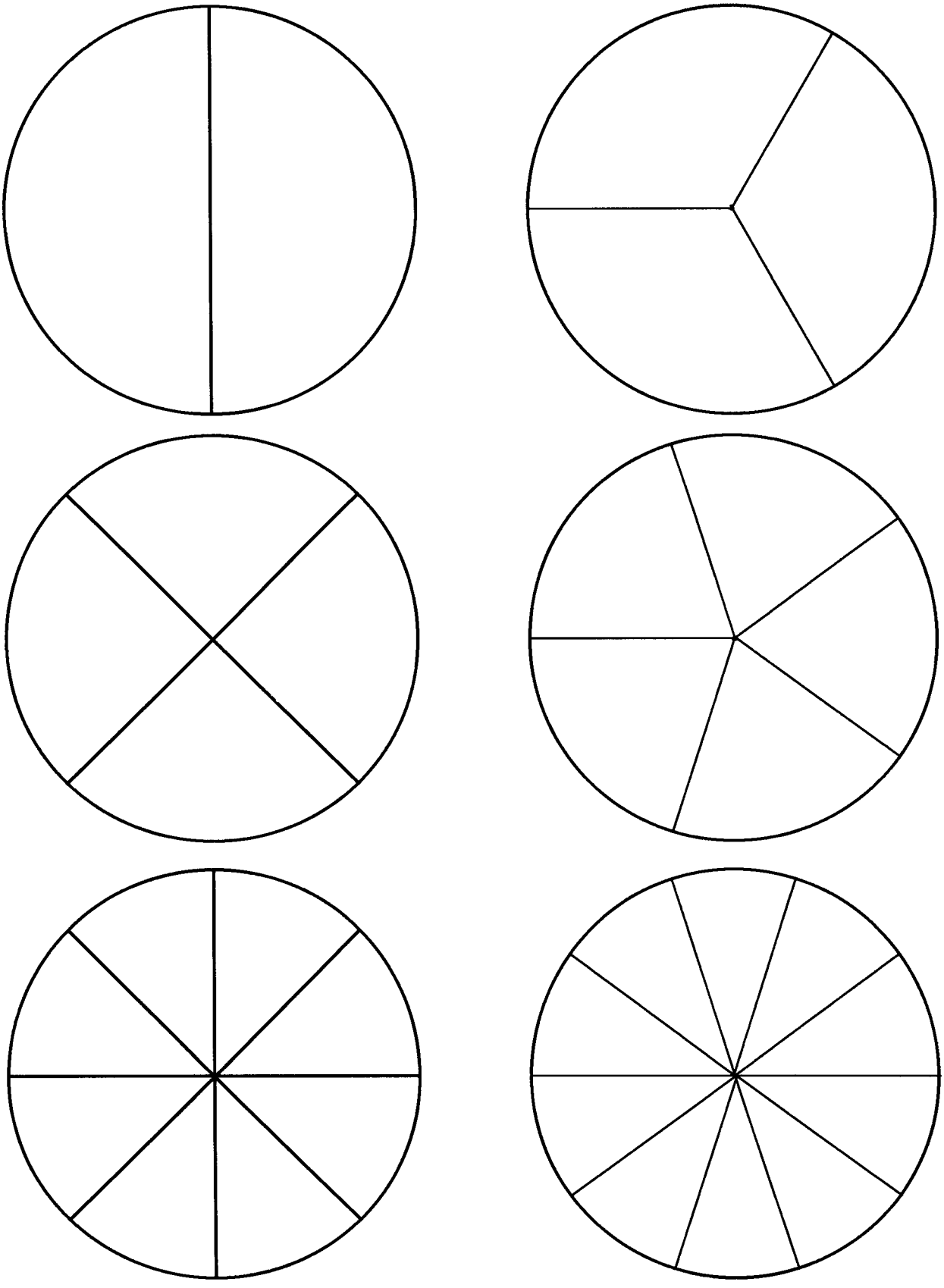


D.



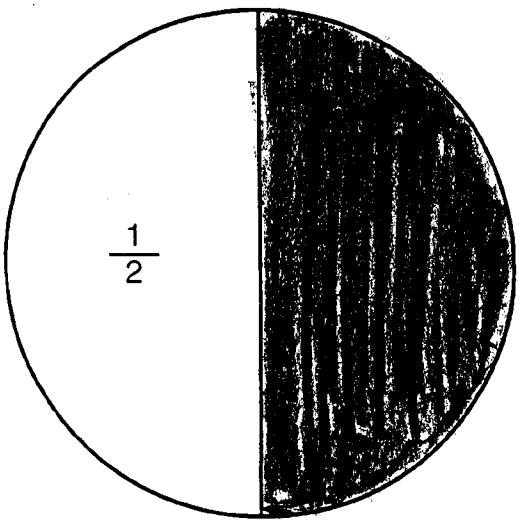
Directions: Look at each musical note and write the fractional number for each. Shade in one part of each note.

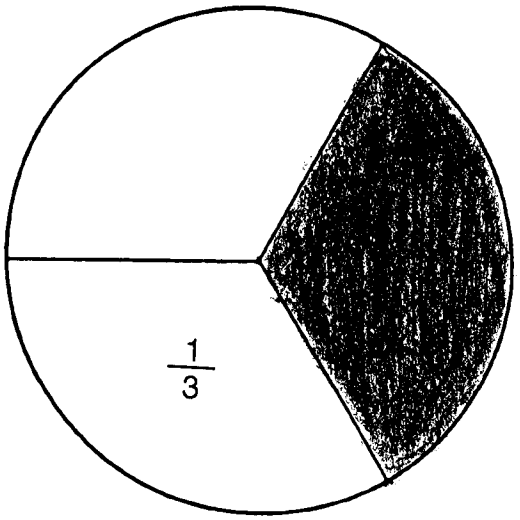
Student Resource #1

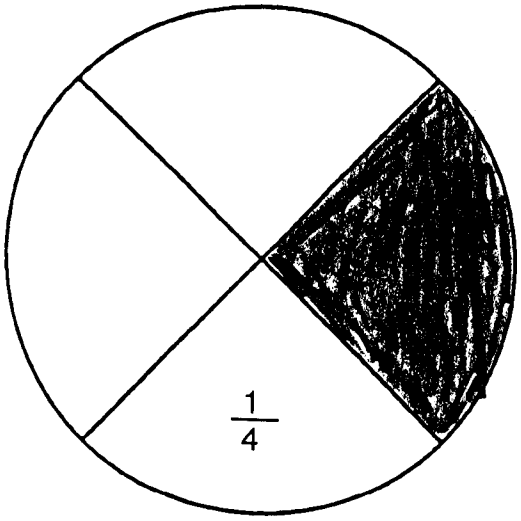


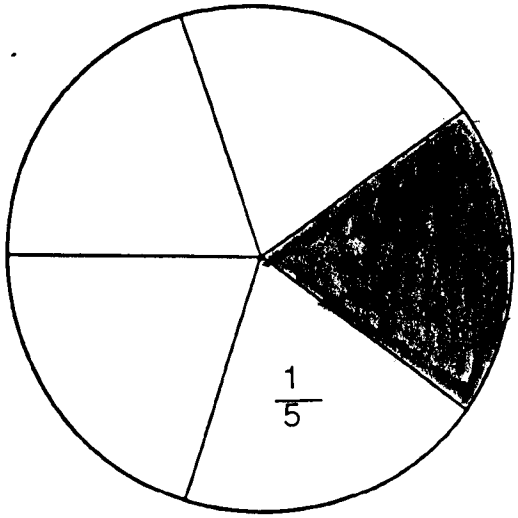
Directions: Look at each musical note and write the fractional number for each. Shade in one part of each note.

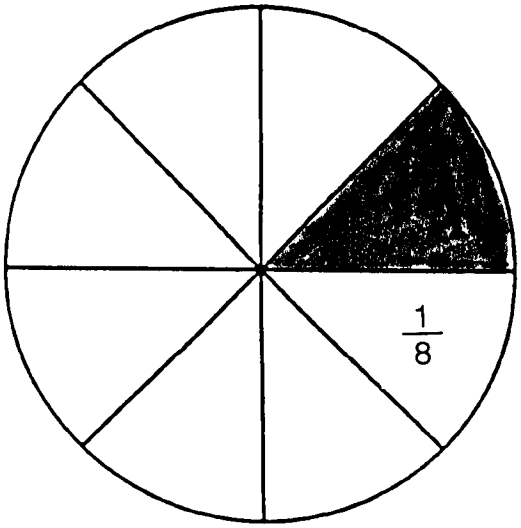
Teacher Resource #1

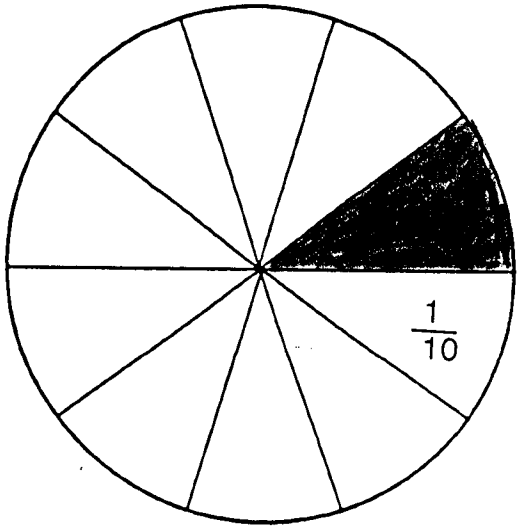








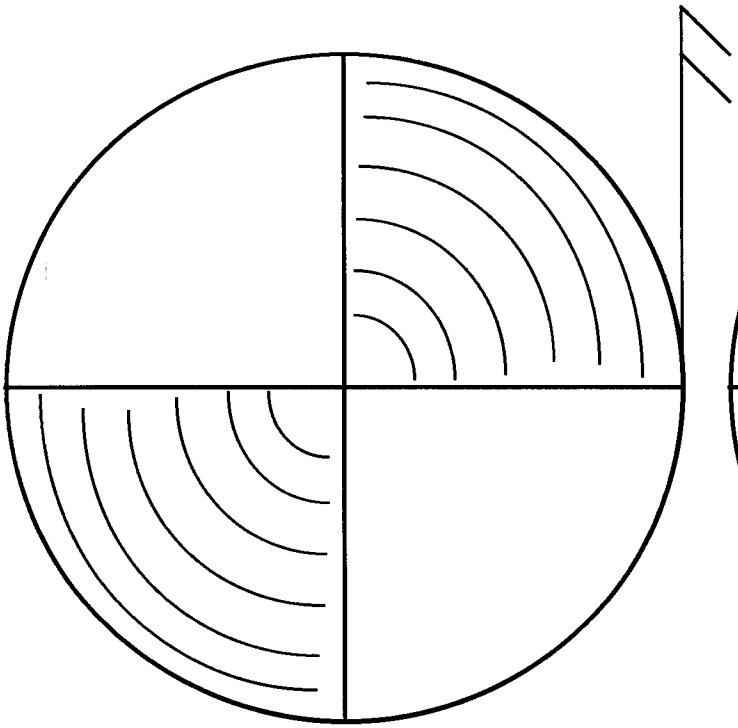




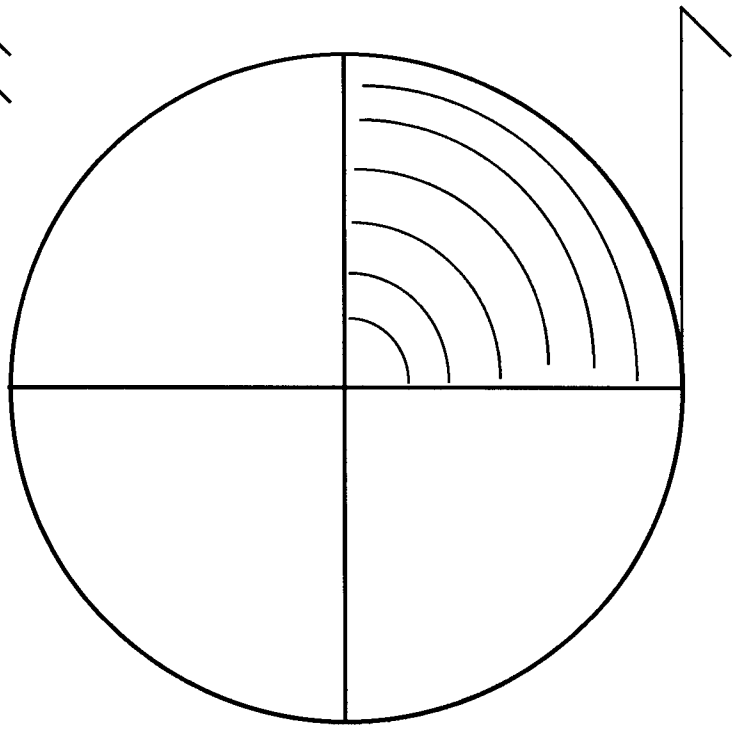
Note Your Fractions!

Student Resource #2

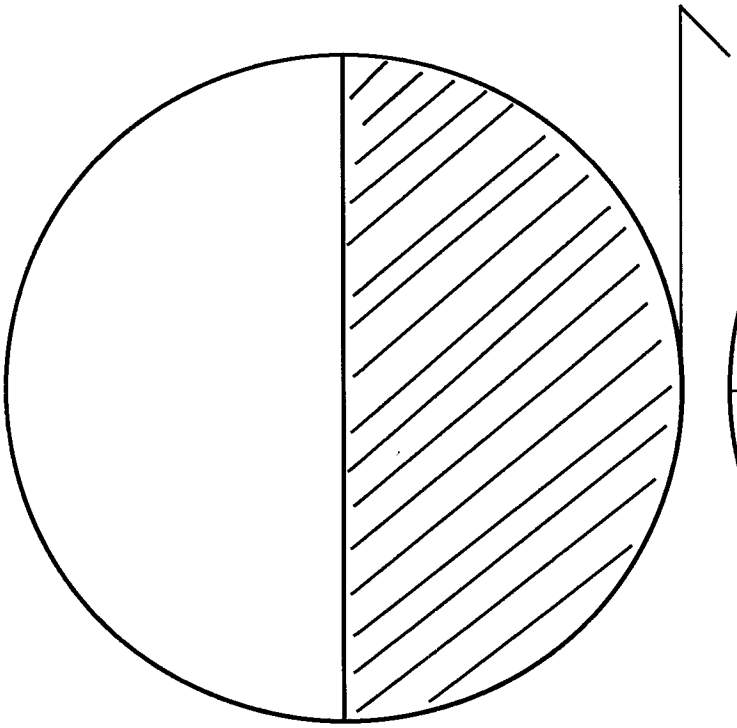
Write the fractional number for each note.



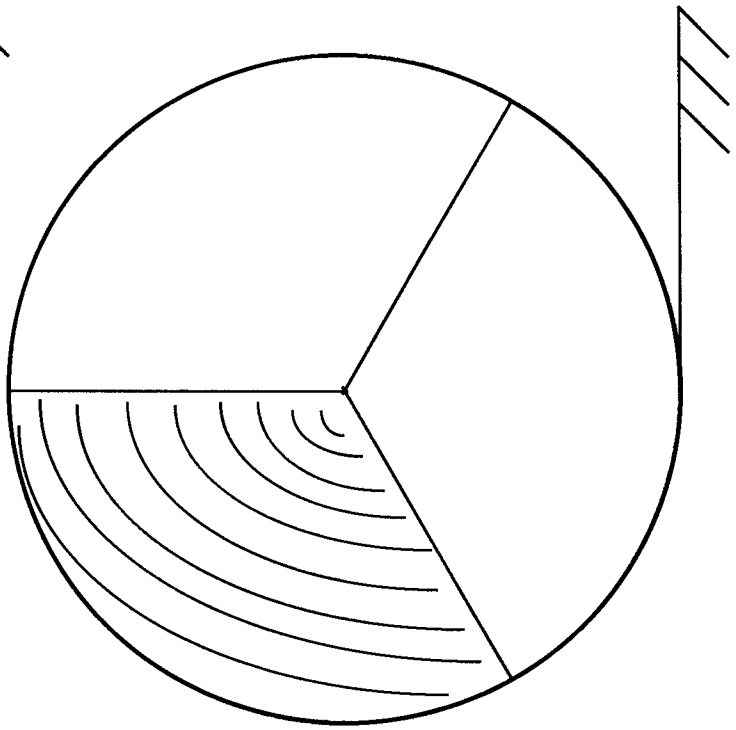
_____



_____



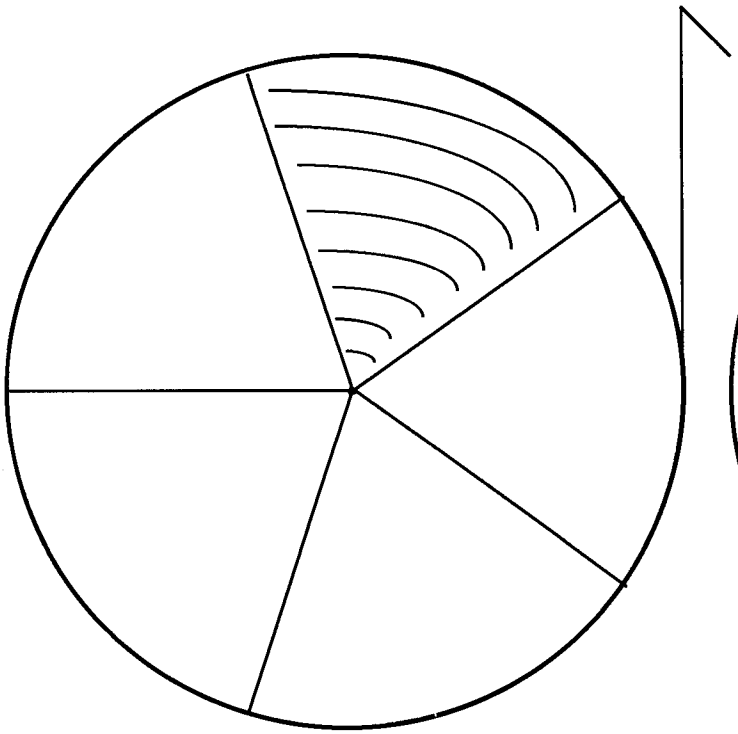
_____

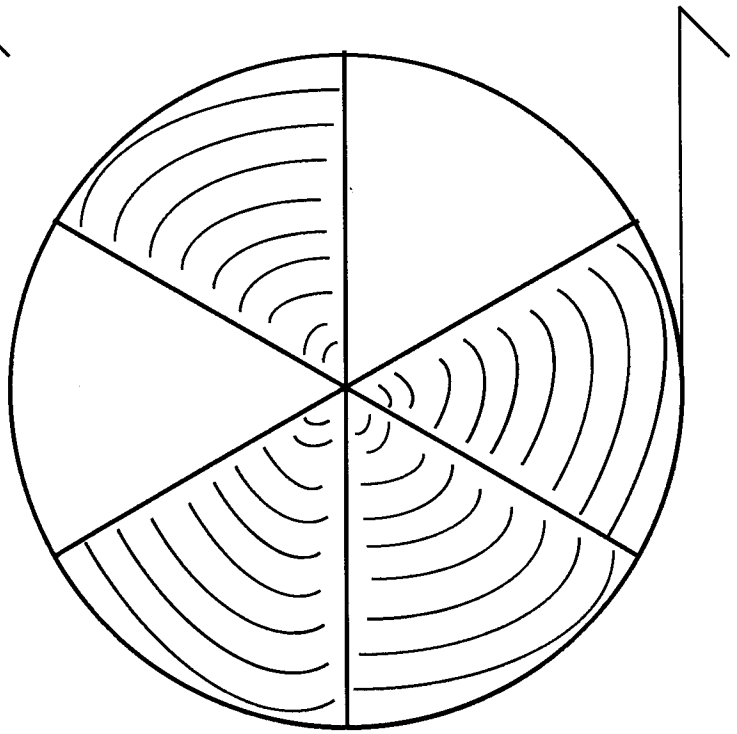


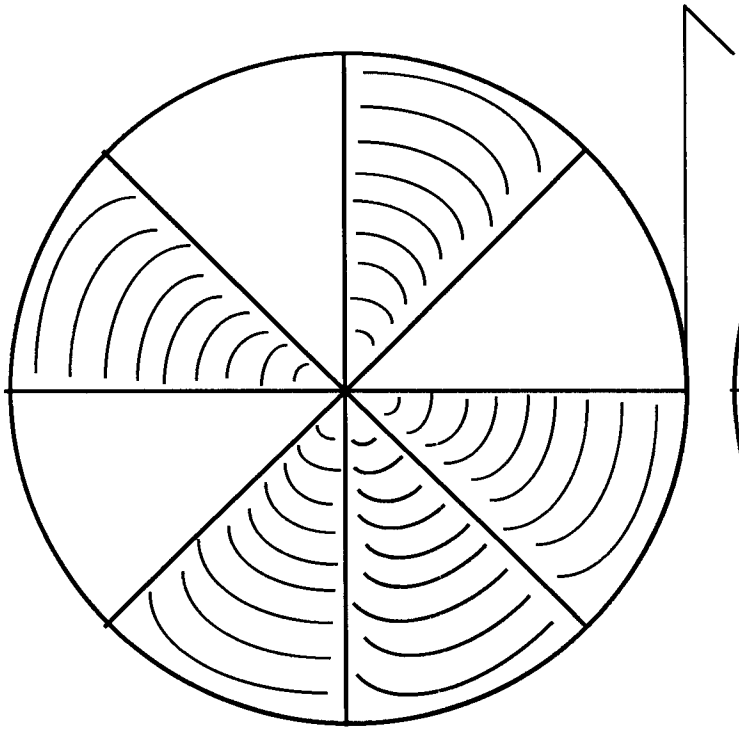
_____

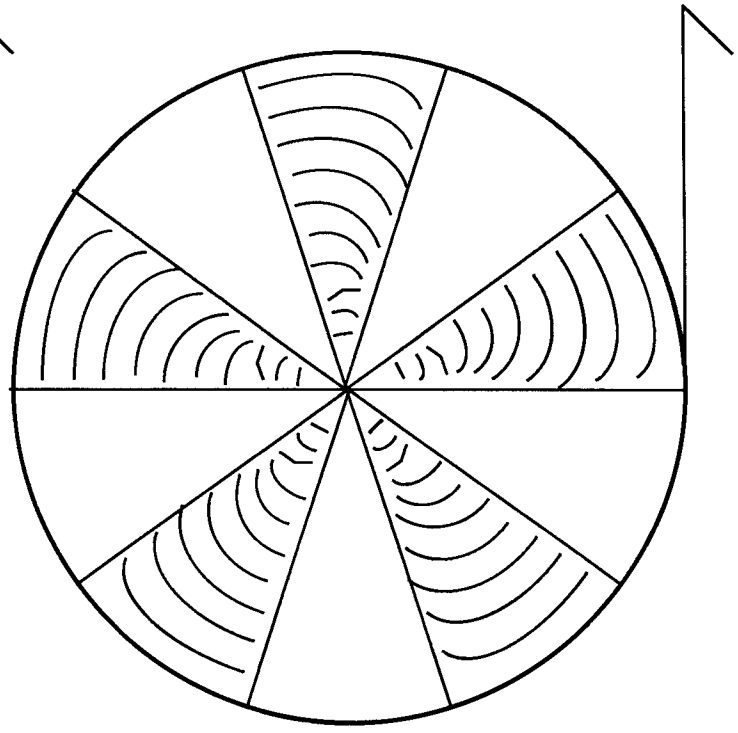
Note Your Fractions!

Student Resource #2





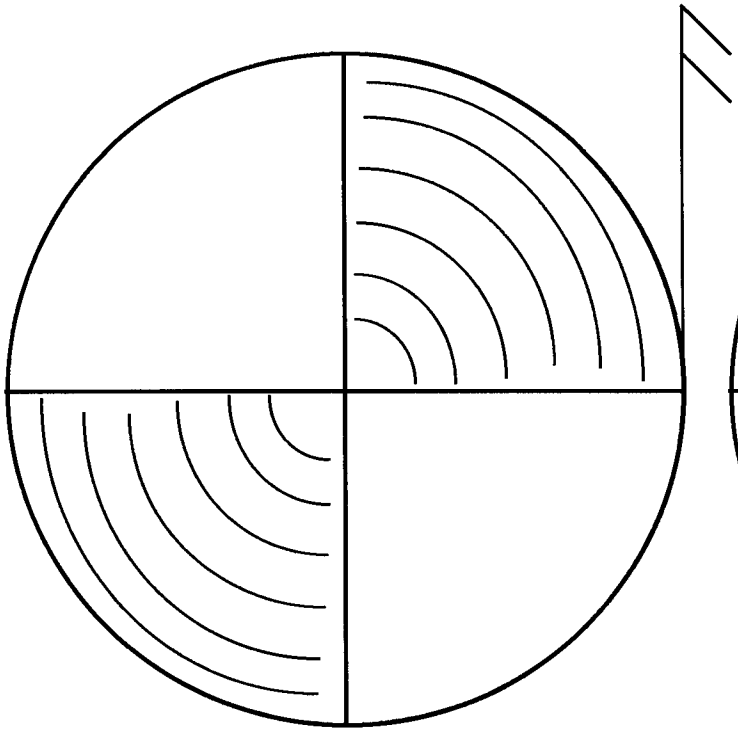




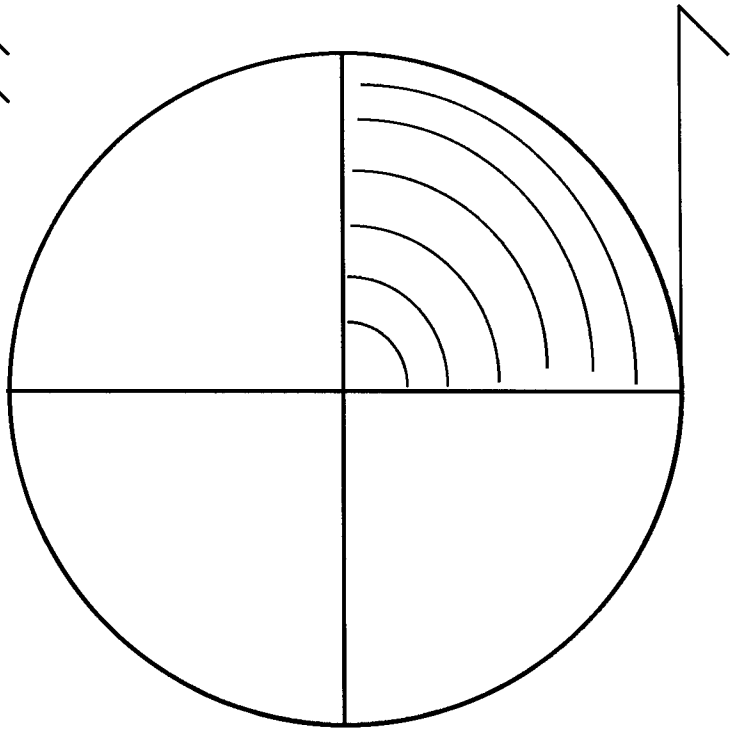
Note Your Fractions!

Teacher Resource #2

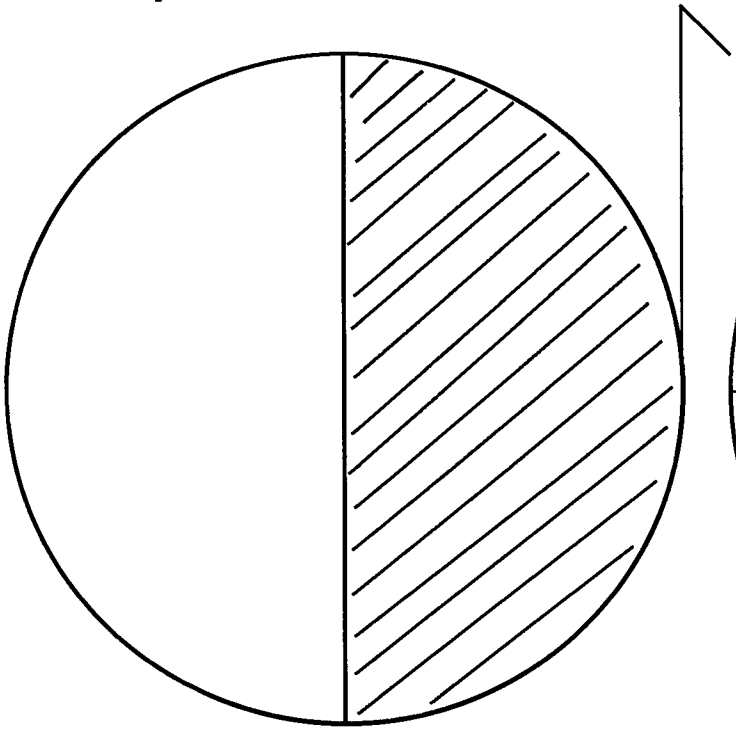
Write the fractional number for each note.



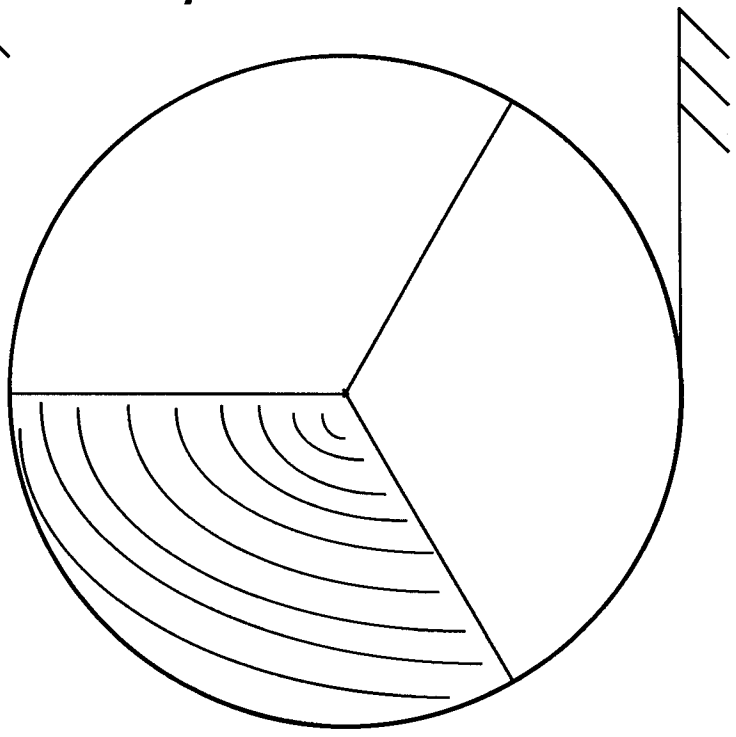
$\frac{2}{4}$



$\frac{1}{4}$



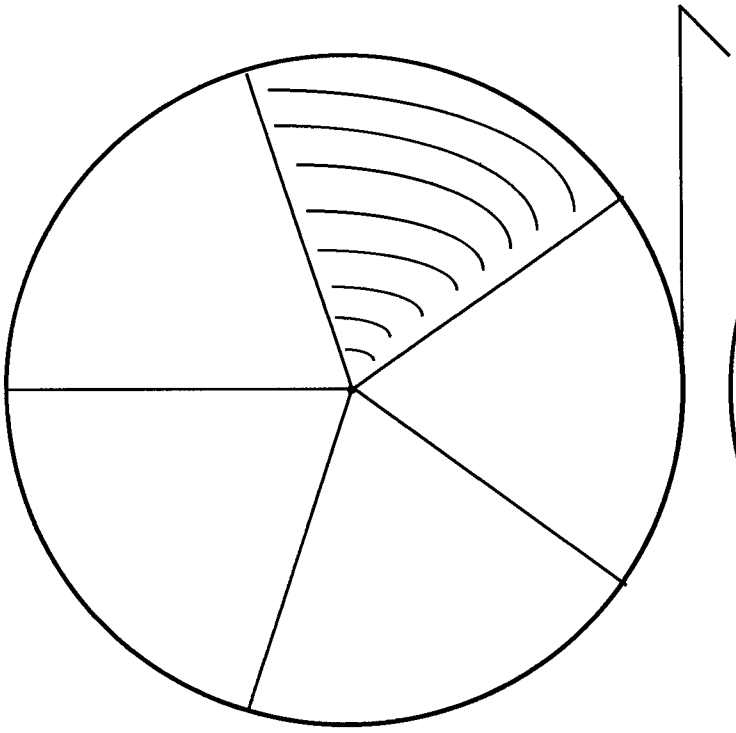
$\frac{1}{2}$



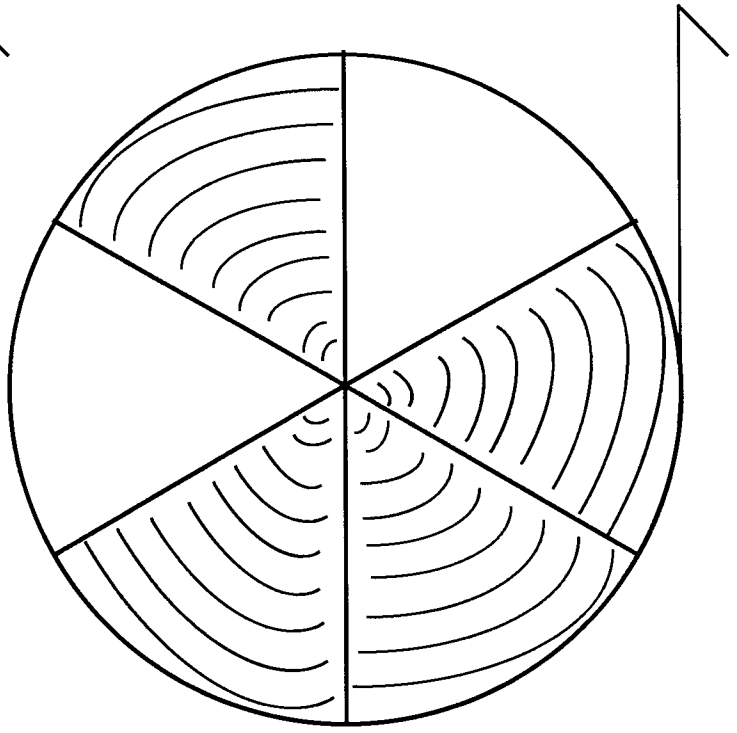
$\frac{1}{3}$

Note Your Fractions!

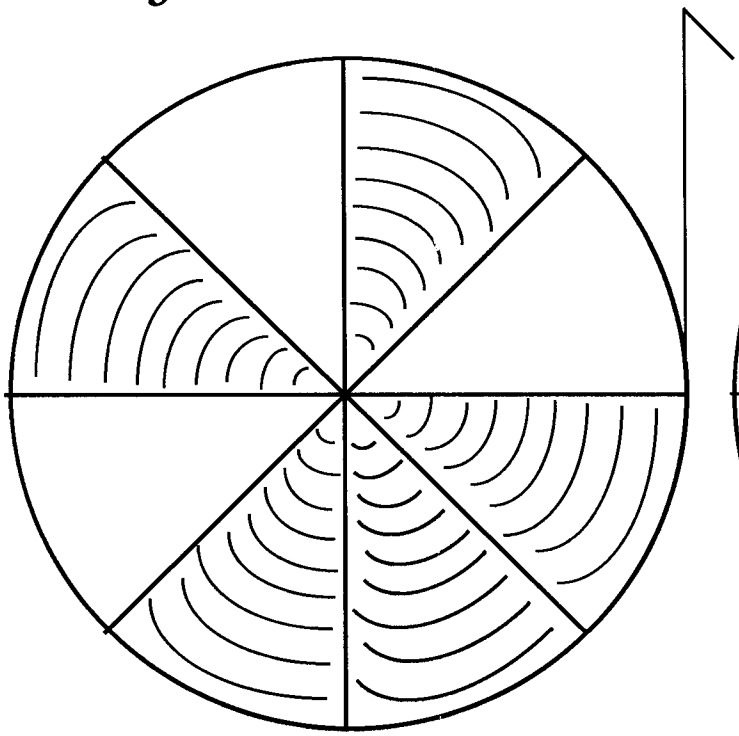
Teacher Resource #2



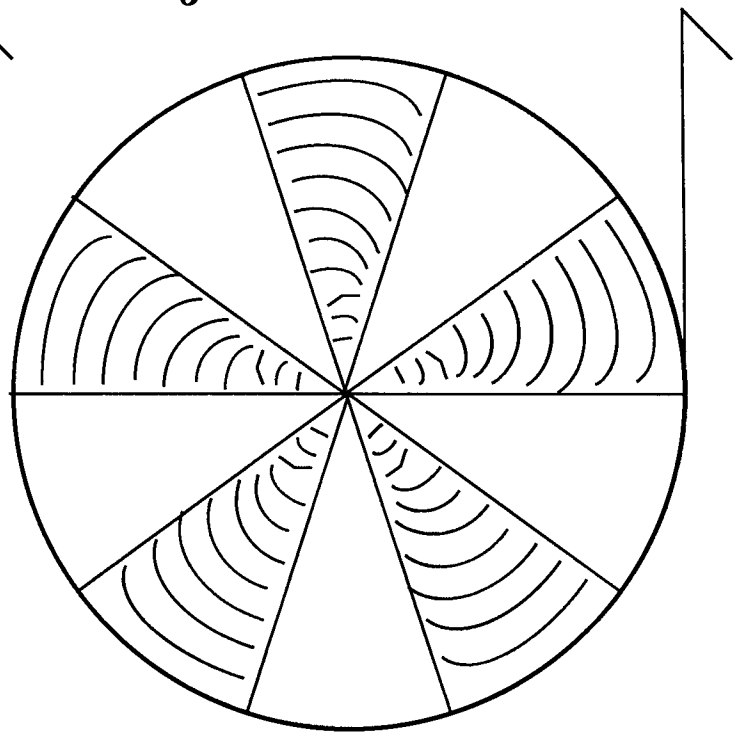
$\frac{1}{5}$



$\frac{4}{6}$



$\frac{5}{8}$

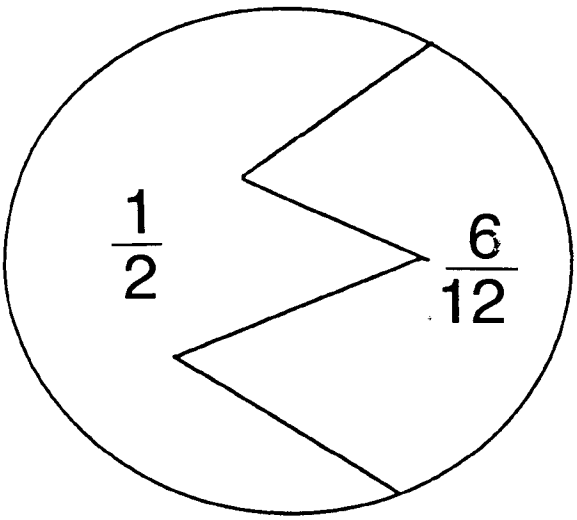


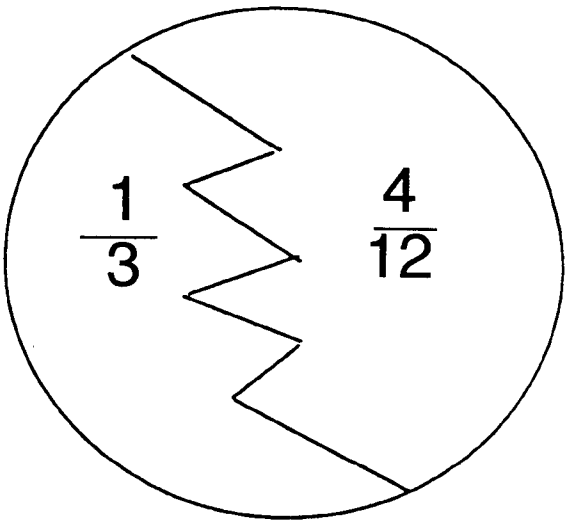
$\frac{5}{10}$

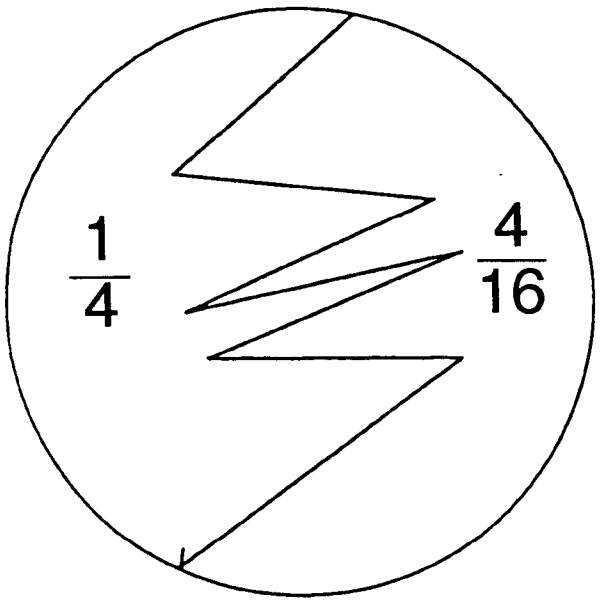
Student Resource #3

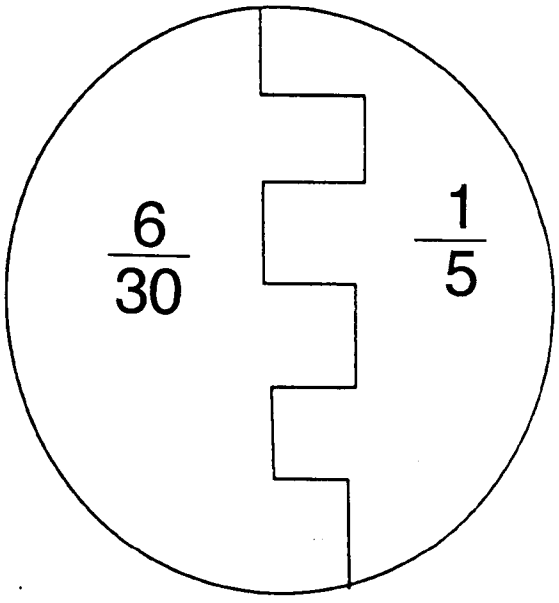
NAME THAT TUNE PUZZLE

Use multiplication chart. Take fractional puzzle pieces out of envelope. Match equivalent fractions puzzle pieces.





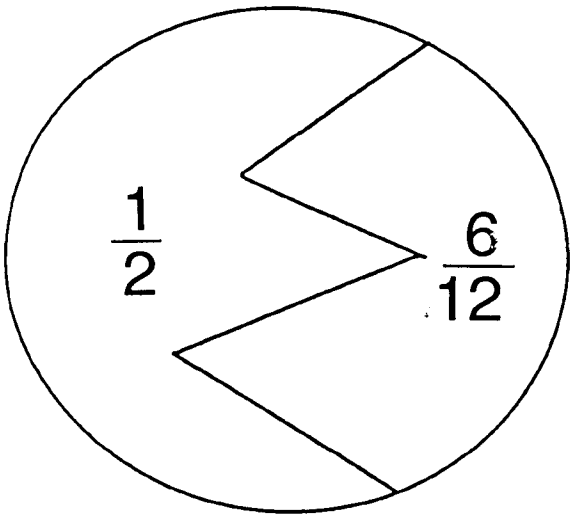


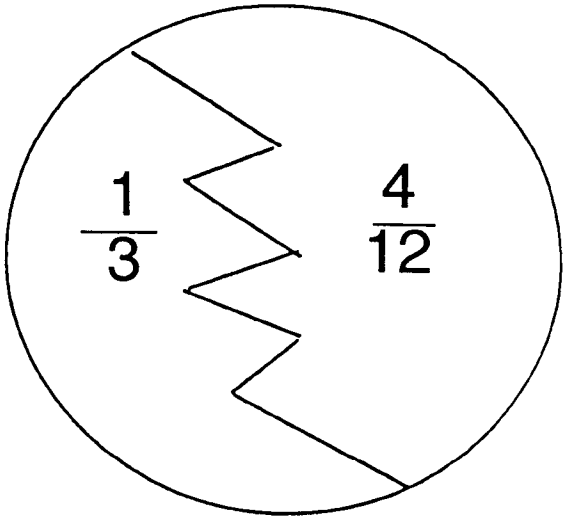


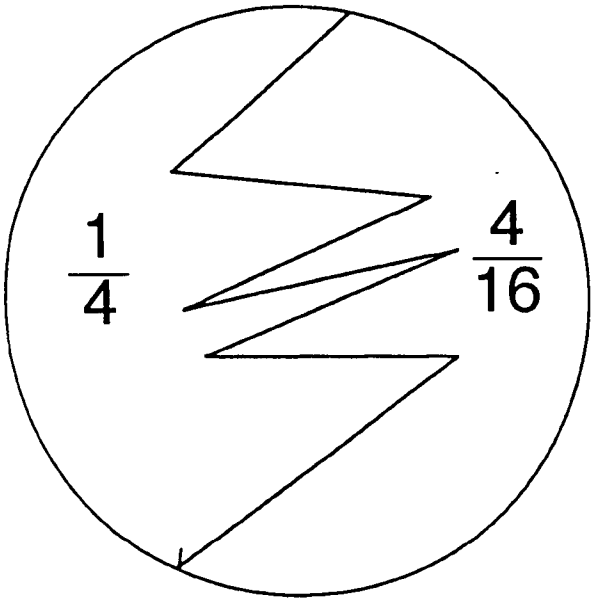
Teacher Resource #3

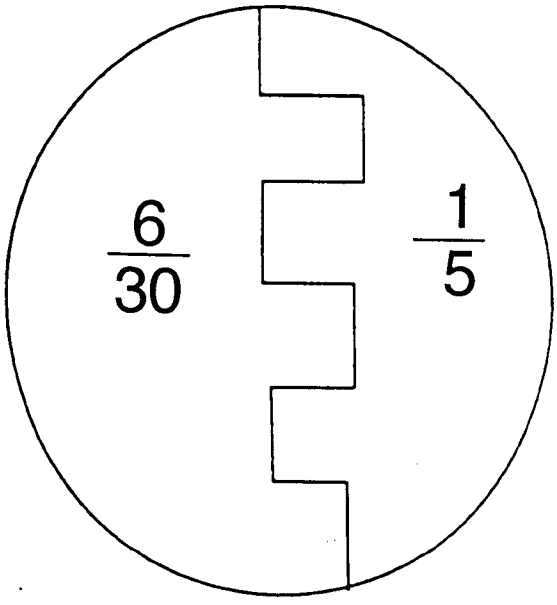
NAME THAT TUNE PUZZLE

Use multiplication chart. Take fractional puzzle pieces out of envelope. Match equivalent fractions puzzle pieces.





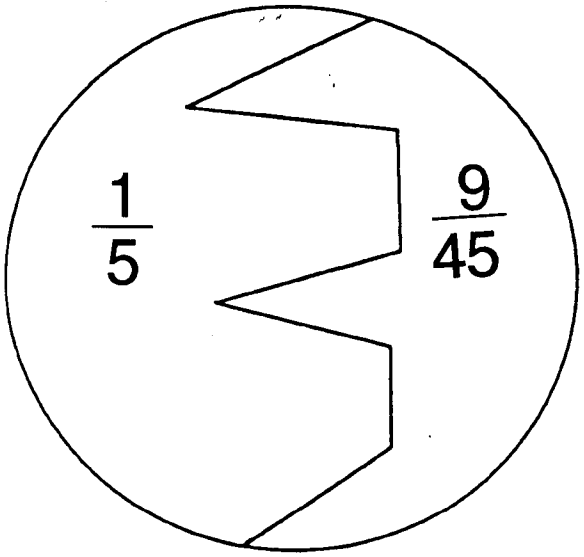


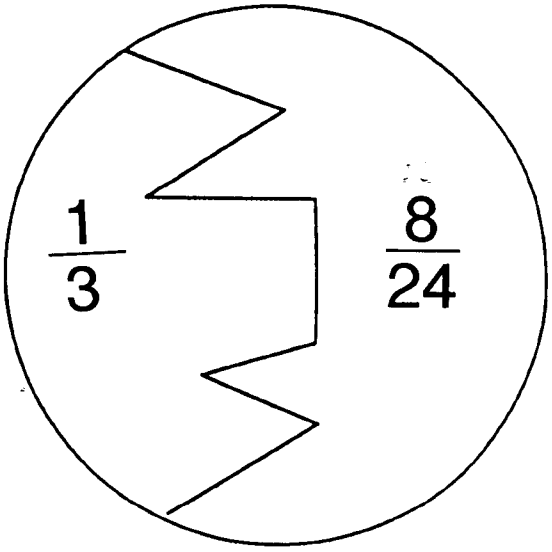


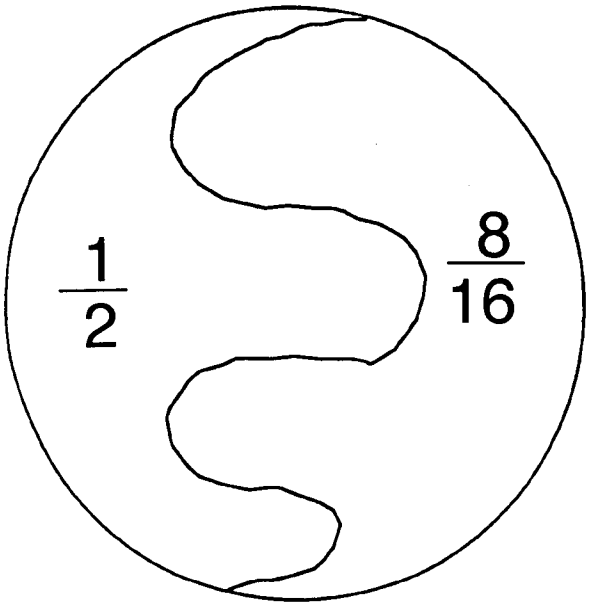
Student Resource #3

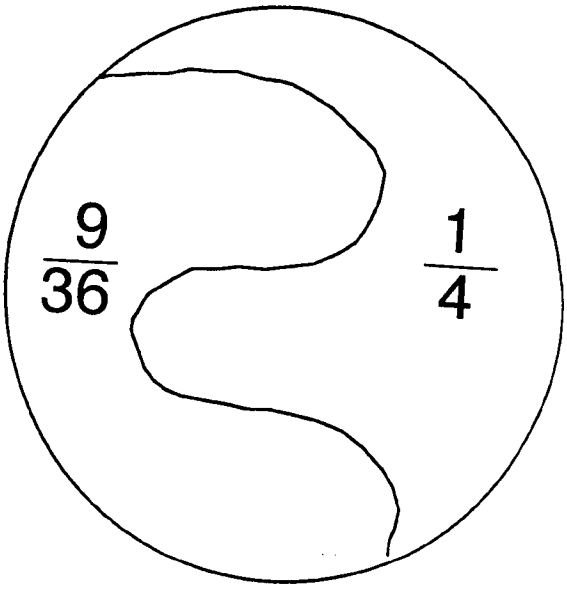
NAME THAT TUNE PUZZLE

Use multiplication chart. Take fractional puzzle pieces out of envelope. Match the equivalent fractions puzzle pieces.



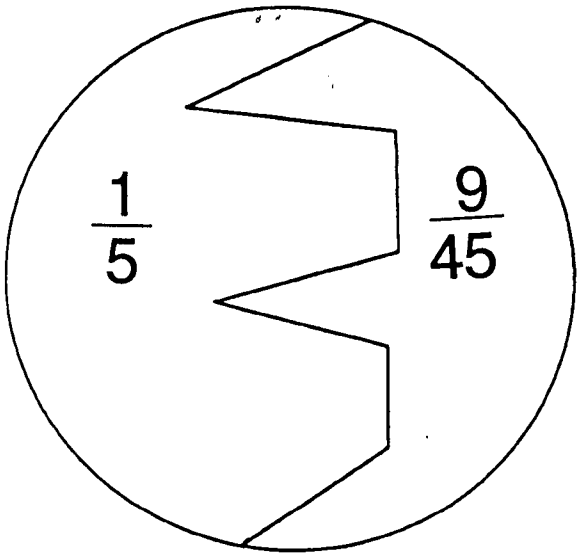


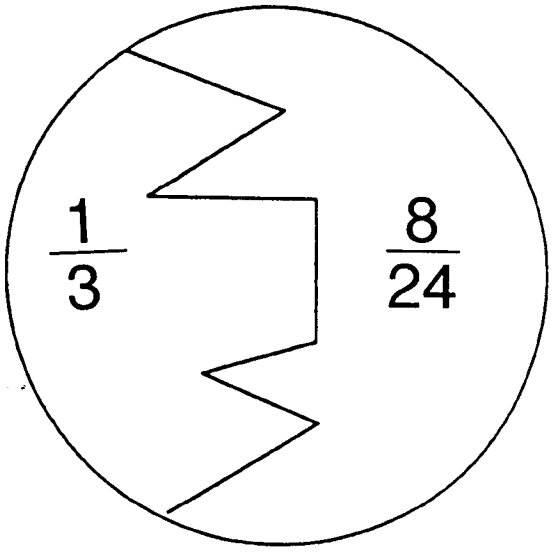


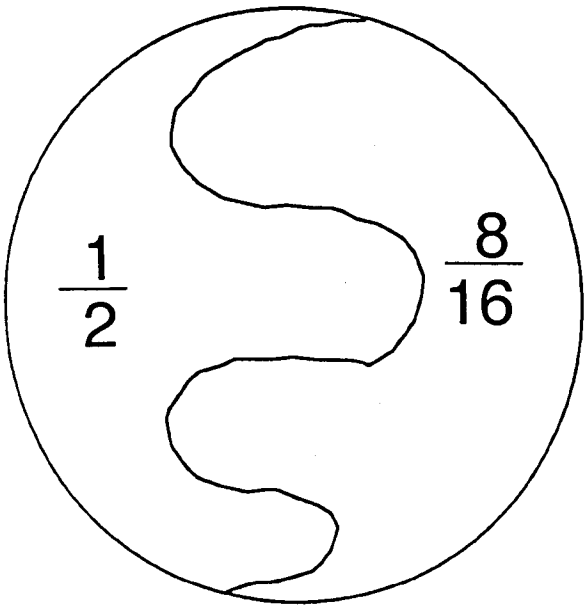


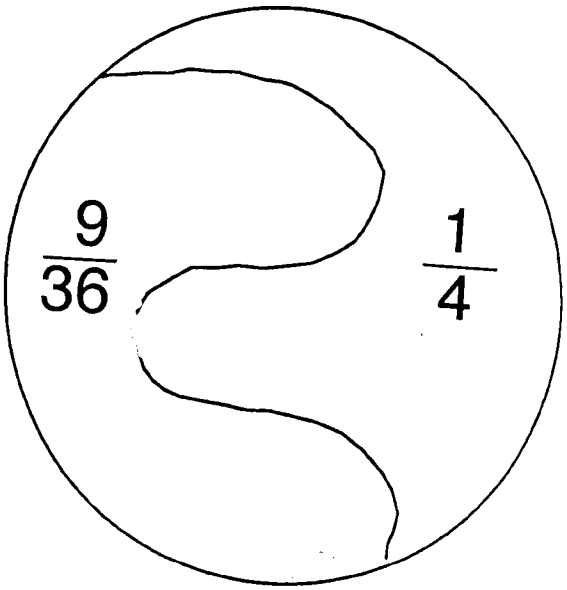
NAME THAT TUNE PUZZLE

Use multiplication chart. Take fractional puzzle pieces out of envelope. Match the equivalent fractions puzzle pieces.









NAME THAT TUNE MULTIPLICATION CHART

Use charts to identify multiples and equivalent fractions.

Multiples of Odd Ordinal Numbers

1	**3**	**5**	**7**	**9**	**11**	**13**
2	6	10	14	18	22	26
3	9	15	21	27	33	39
4	12	20	28	36	44	52
5	15	25	35	45	55	65
6	18	30	42	54	66	78
7	21	35	49	63	77	91
8	24	40	56	72	88	104
9	27	45	63	81	99	117
10	30	50	70	90	110	130
11	33	55	77	99	121	143
12	36	60	84	108	132	156

Multiples of Even Ordinal Numbers

0	**2**	**4**	**6**	**8**	**10**	**12**
1	2	4	6	8	10	12
2	4	8	12	16	20	24
3	6	12	18	24	30	36
4	8	16	24	32	40	48
5	10	20	30	40	50	60
6	12	24	36	48	60	72
7	14	28	42	56	70	84
8	16	32	48	64	80	96
9	18	36	54	72	90	108
10	20	40	60	80	100	120
11	22	44	66	88	110	132
12	24	48	72	96	120	144

Mrs. L. Miller Summer 1998

NAME THAT TUNE MULTIPLICATION CHART

Use charts to identify multiples and equivalent fractions.

Multiples of Odd Ordinal Numbers

1	3	5	7	9	11	13
2	6	10	14	18	22	26
3	9	15	21	27	33	39
4	12	20	28	36	44	52
5	15	25	35	45	55	65
6	18	30	42	54	66	78
7	21	35	49	63	77	91
8	24	40	56	72	88	104
9	27	45	63	81	99	117
10	30	50	70	90	110	130
11	33	55	77	99	121	143
12	36	60	84	108	132	156

Multiples of Even Ordinal Numbers

0	2	4	6	8	10	12
1	2	4	6	8	10	12
2	4	8	12	16	20	24
3	6	12	18	24	30	36
4	8	16	24	32	40	48
5	10	20	30	40	50	60
6	12	24	36	48	60	72
7	14	28	42	56	70	84
8	16	32	48	64	80	96
9	18	36	54	72	90	108
10	20	40	60	80	100	120
11	22	44	66	88	110	132
12	24	48	72	96	120	144

By Mrs. L. Miller Summer 1998

Student Resource #4

WHO HAS MY EQUIVALENT NOTE?

Listen carefully for each fractional number. Identify (say) the equivalent fraction on the back of your card. Then read and show the fractional number of the front of your card.

$\frac{14}{16}$	$\frac{18}{27}$
$\frac{36}{45}$	$\frac{81}{90}$
$\frac{56}{63}$	$\frac{15}{18}$

Student Resource #4

WHO HAS MY EQUIVALENT NOTE?

Listen carefully for each fractional number. Identify (say) the equivalent fraction on the back of your card. Then read and show the fractional number of the front of your card.

$\frac{5}{10}$	$\frac{24}{28}$
$\frac{24}{32}$	$\frac{30}{54}$
$\frac{25}{40}$	$\frac{7}{42}$

WHO HAS MY EQUIVALENT NOTE?

Listen carefully for each fractional number. Identify (say) the equivalent fraction on the back of your card. Then read and show the fractional number of the front of your card.

$\frac{5}{6}$	$\frac{8}{9}$
$\frac{4}{5}$	$\frac{9}{10}$
$\frac{2}{3}$	$\frac{7}{8}$

WHO HAS MY EQUIVALENT NOTE?

Listen carefully for each fractional number. Identify (say) the equivalent fraction on the back of your card. Then read and show the fractional number of the front of your card.

$\frac{1}{2}$	$\frac{6}{7}$
$\frac{6}{8}$	$\frac{5}{9}$
$\frac{1}{6}$	$\frac{5}{8}$

WHO HAS MY EQUIVALENT NOTE?

ANSWER KEY

$\frac{15}{18} = \frac{5}{6}$

$\frac{5}{10} = \frac{1}{2}$

$\frac{56}{63} = \frac{8}{9}$

$\frac{24}{28} = \frac{6}{7}$

$\frac{36}{45} = \frac{4}{5}$

$\frac{24}{32} = \frac{6}{8}$

$\frac{81}{90} = \frac{9}{10}$

$\frac{30}{54} = \frac{5}{9}$

$\frac{18}{27} = \frac{2}{3}$

$\frac{25}{40} = \frac{5}{8}$

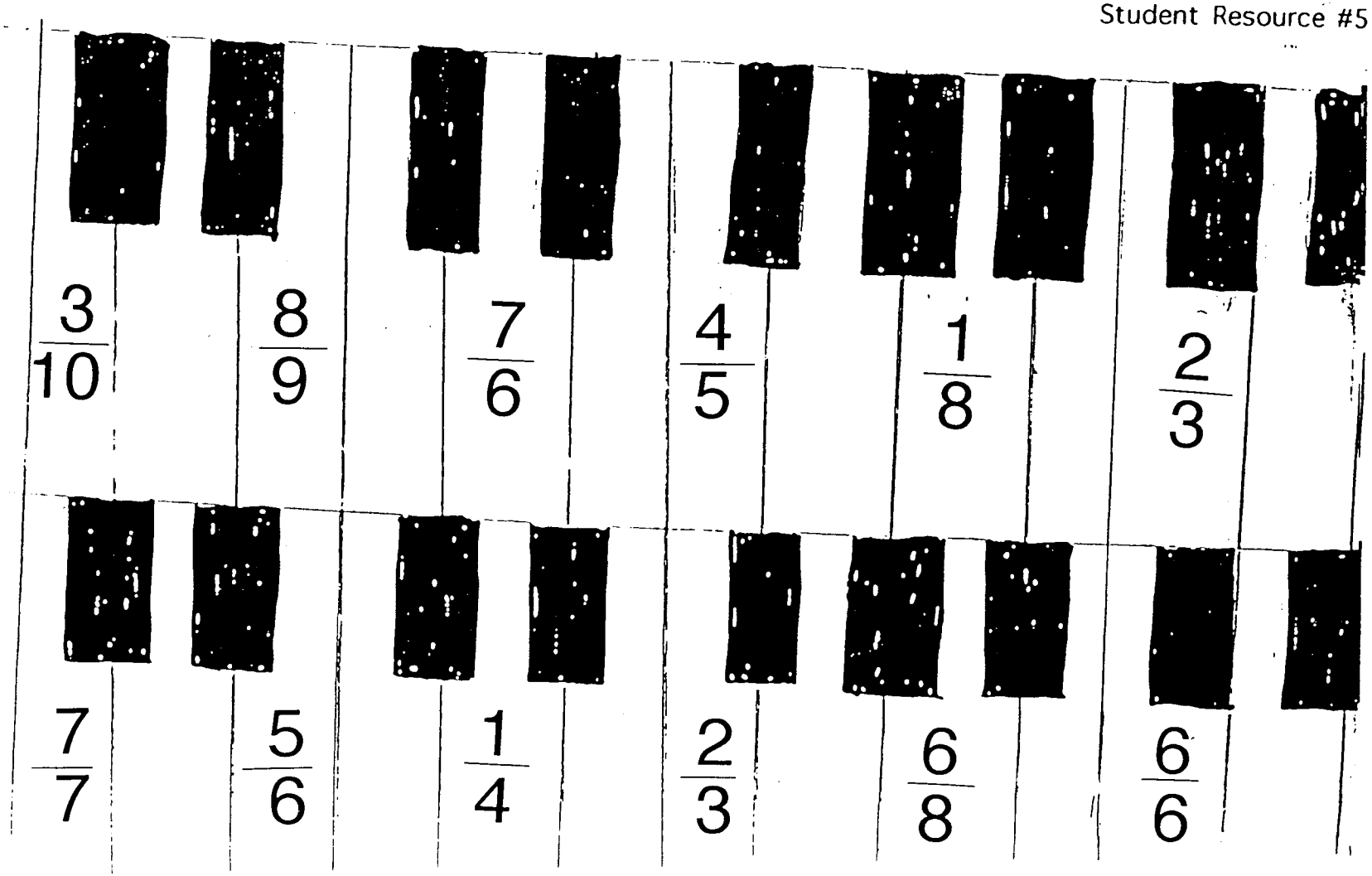
$\frac{14}{16} = \frac{7}{8}$

$\frac{7}{42} = \frac{1}{6}$

COMPARING KEYNOTES

Write in <, =, > sign between each fractional number to compare fractions.

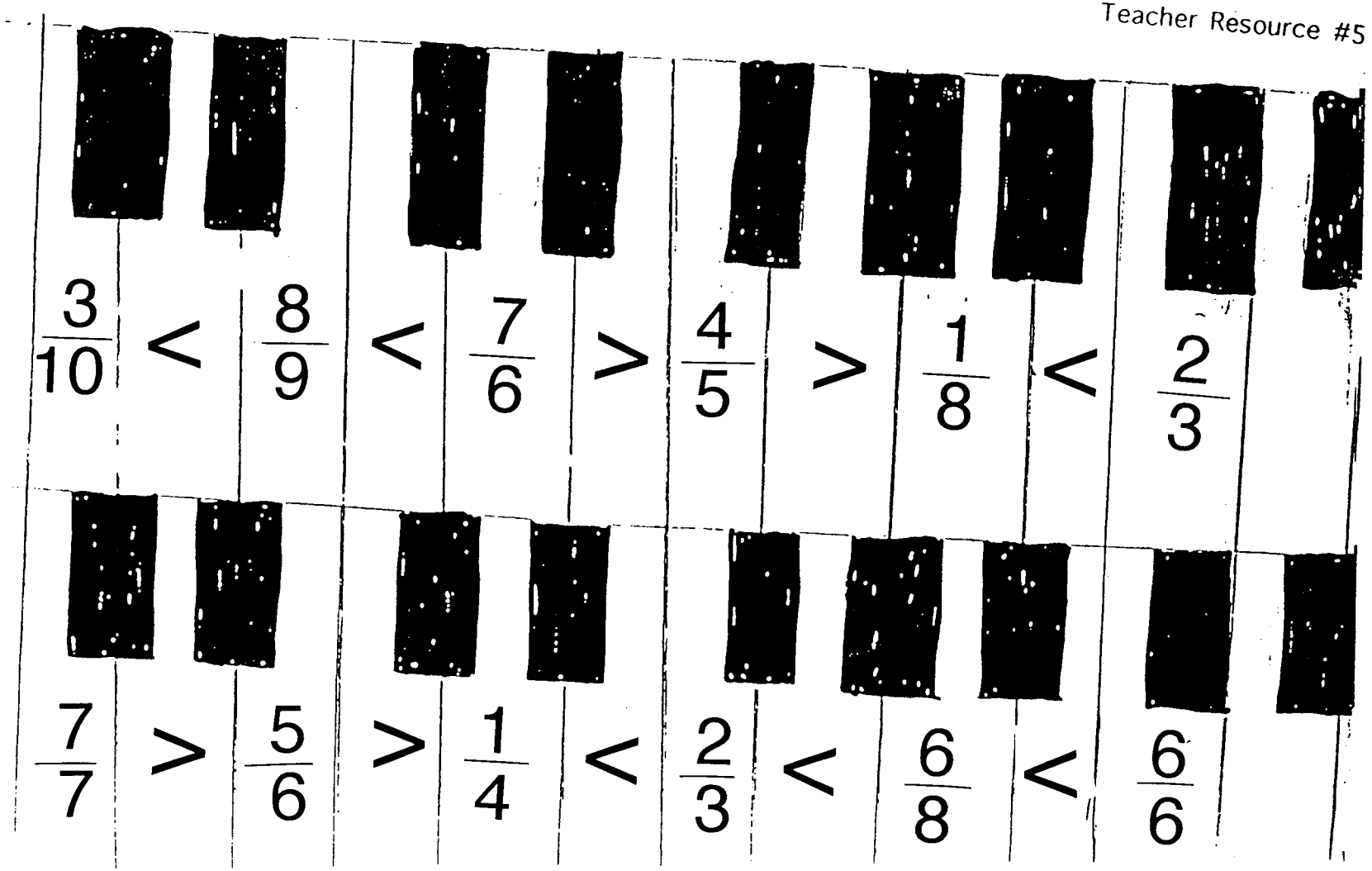
Student Resource #5



COMPARING KEYNOTES

Write in <, =, > sign between each fractional number to compare fractions.

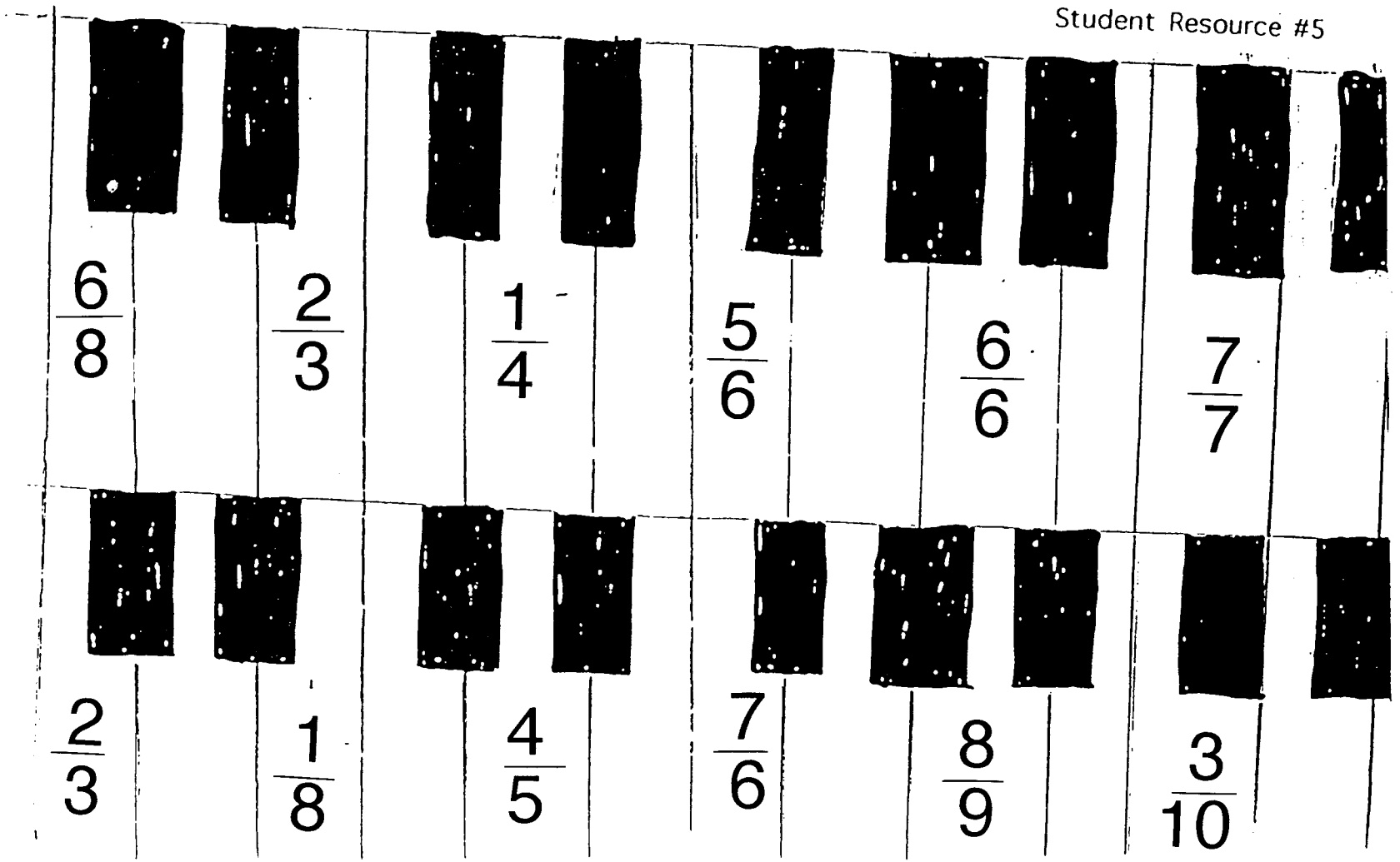
Teacher Resource #5



COMPARING KEYNOTES

Write in <, =, > sign between each fractional number to compare fractions.

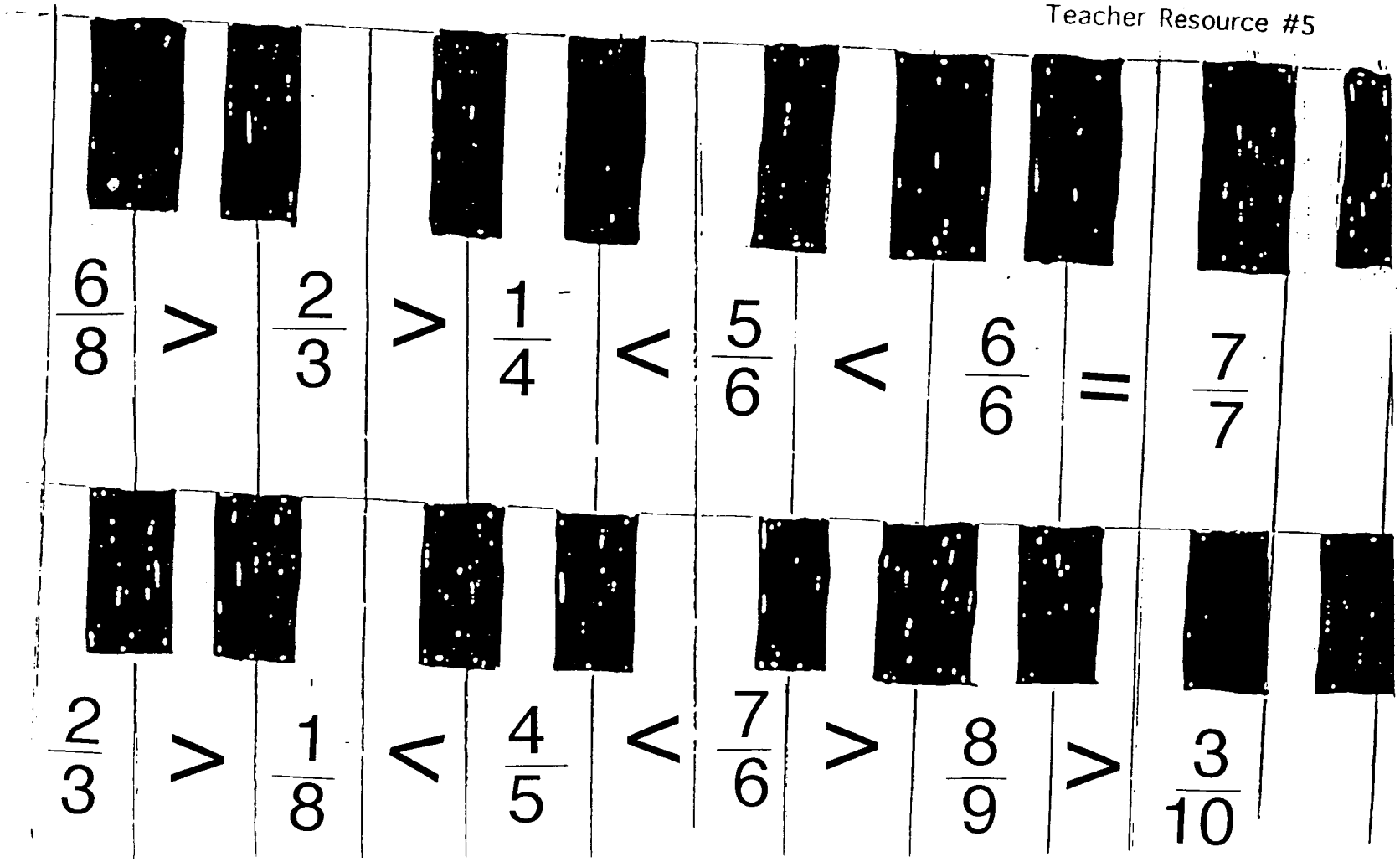
Student Resource #5



COMPARING KEYNOTES

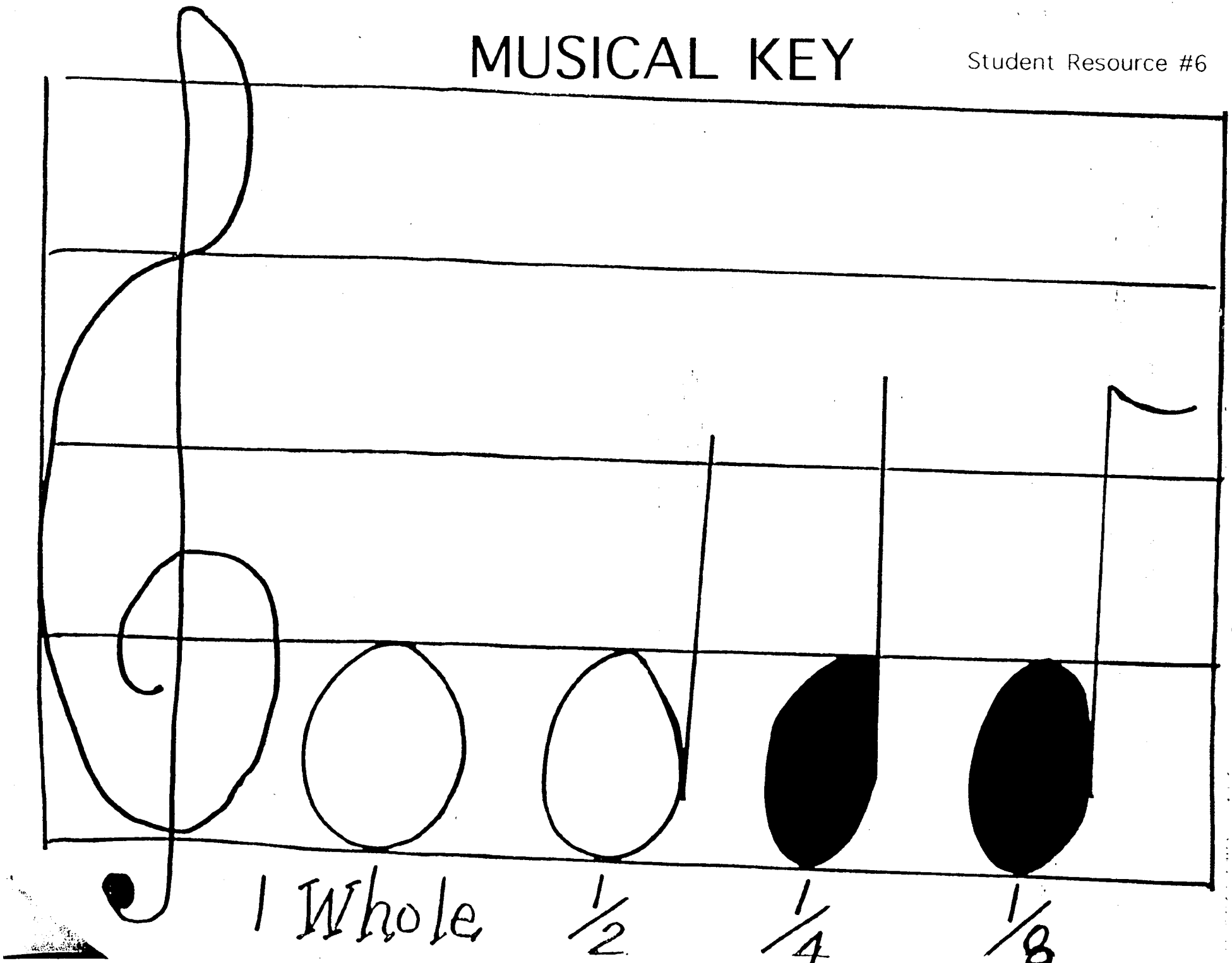
Write in <, =, > sign between each fractional number to compare fractions.

Teacher Resource #5



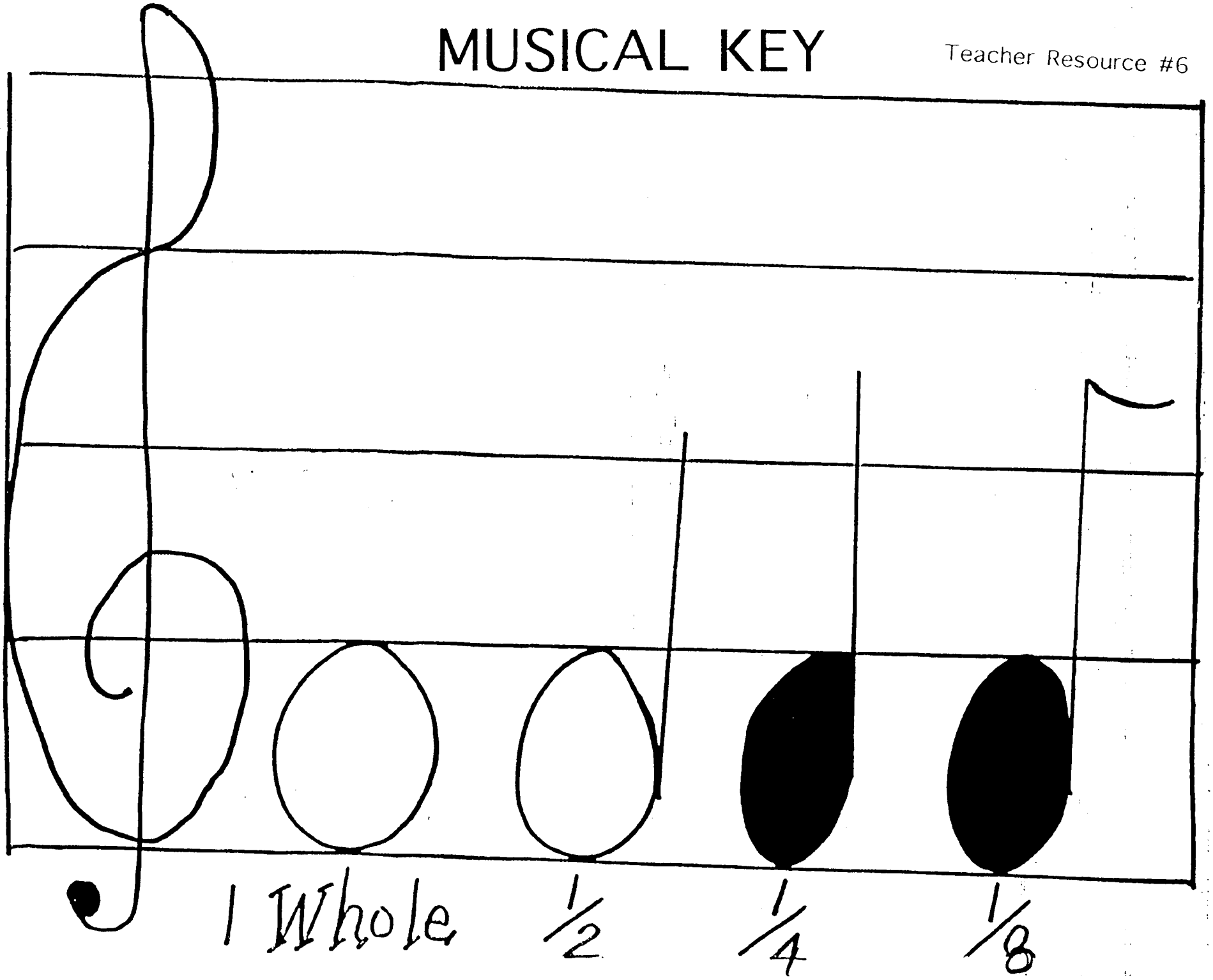
MUSICAL KEY

Student Resource #6



MUSICAL KEY

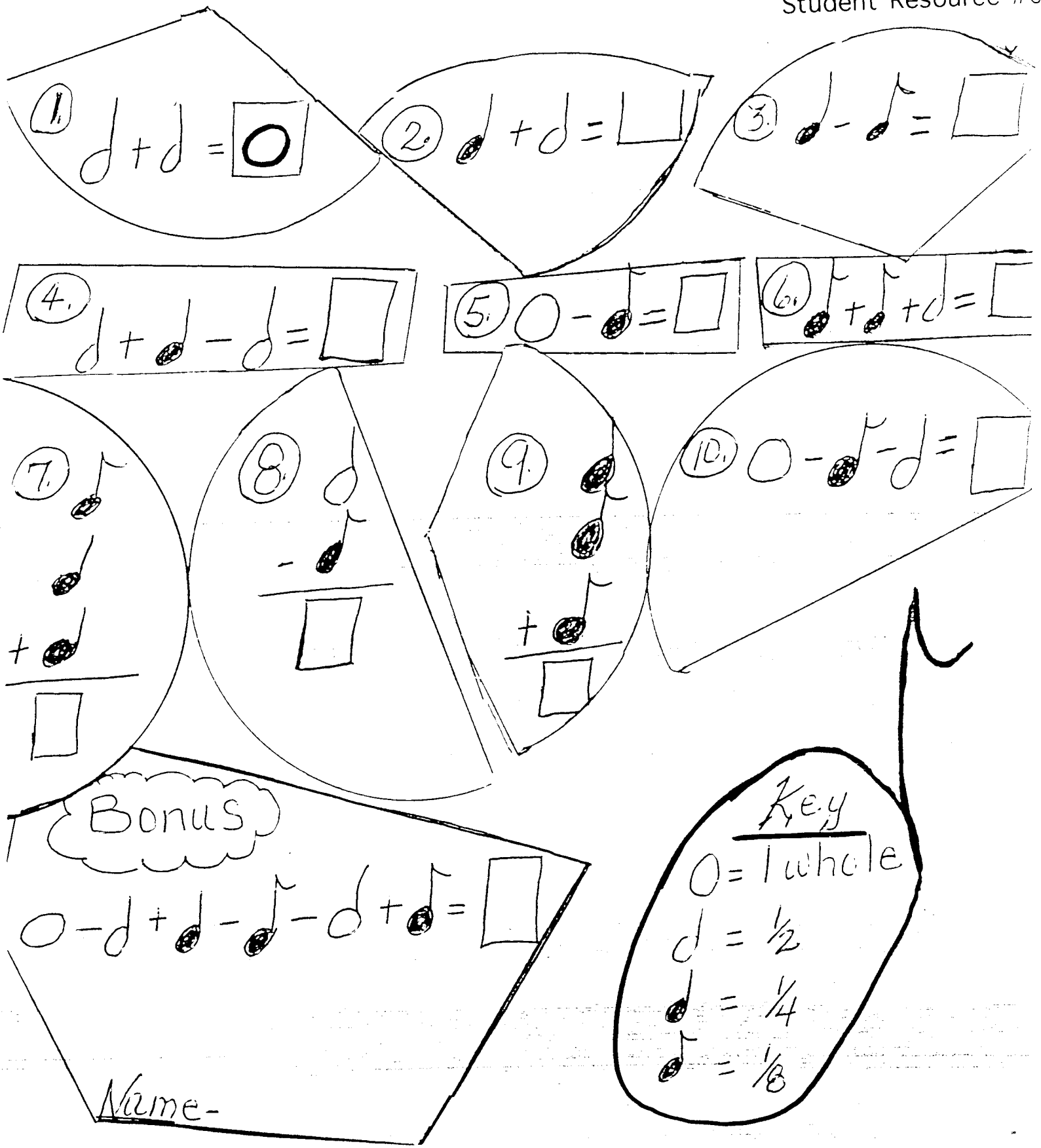
Teacher Resource #6



HIGH NOTES AND LOW NOTES

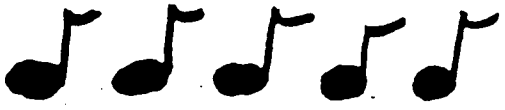
Add and subtract the musical notes. Use the Musical Key and fractional pieces to help you solve each problem.

Student Resource #6



HIGH NOTES AND LOW NOTES

ANSWER KEY

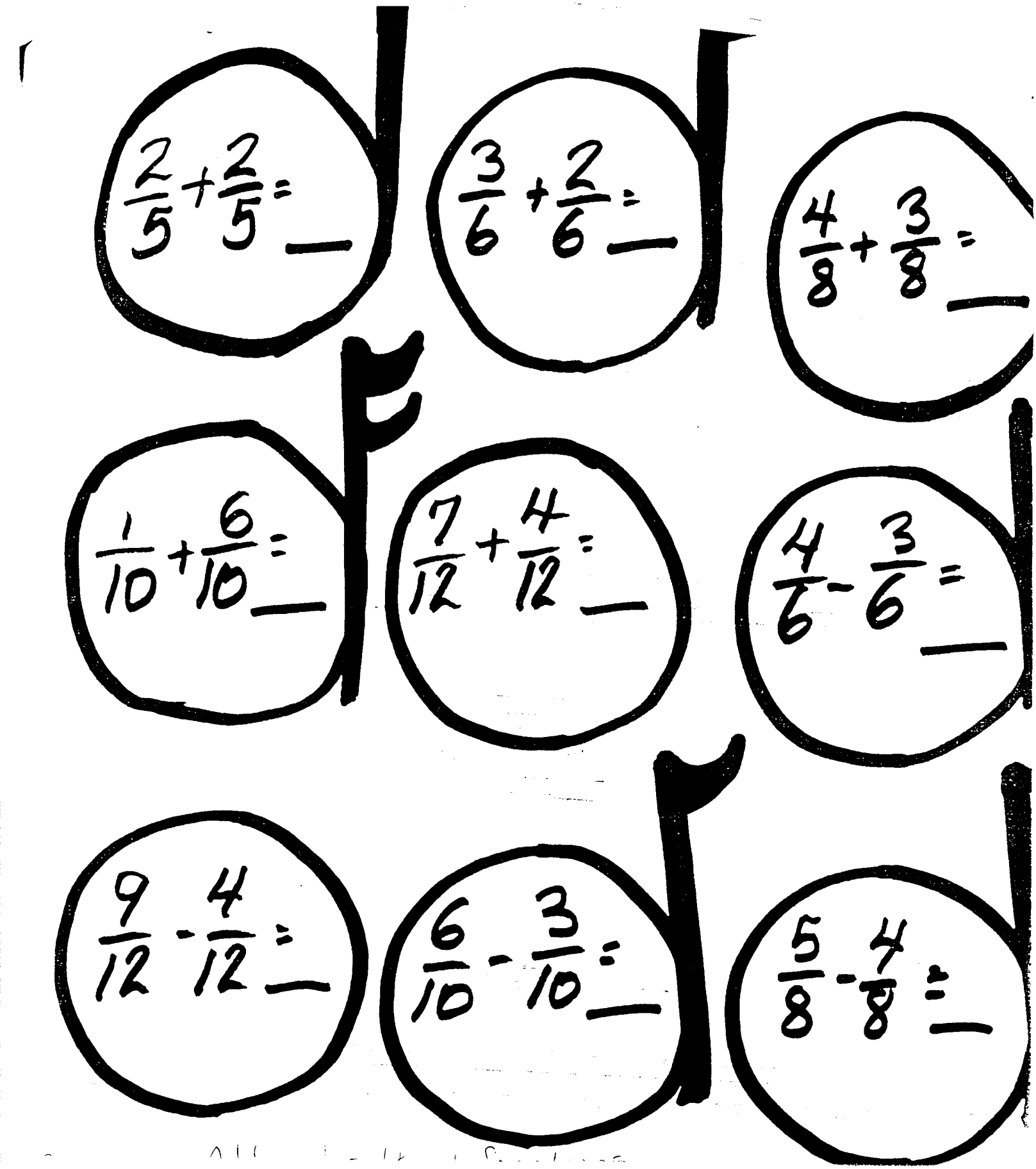
1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 

BONUS: 

KEY NOTES!

Student Resource #7

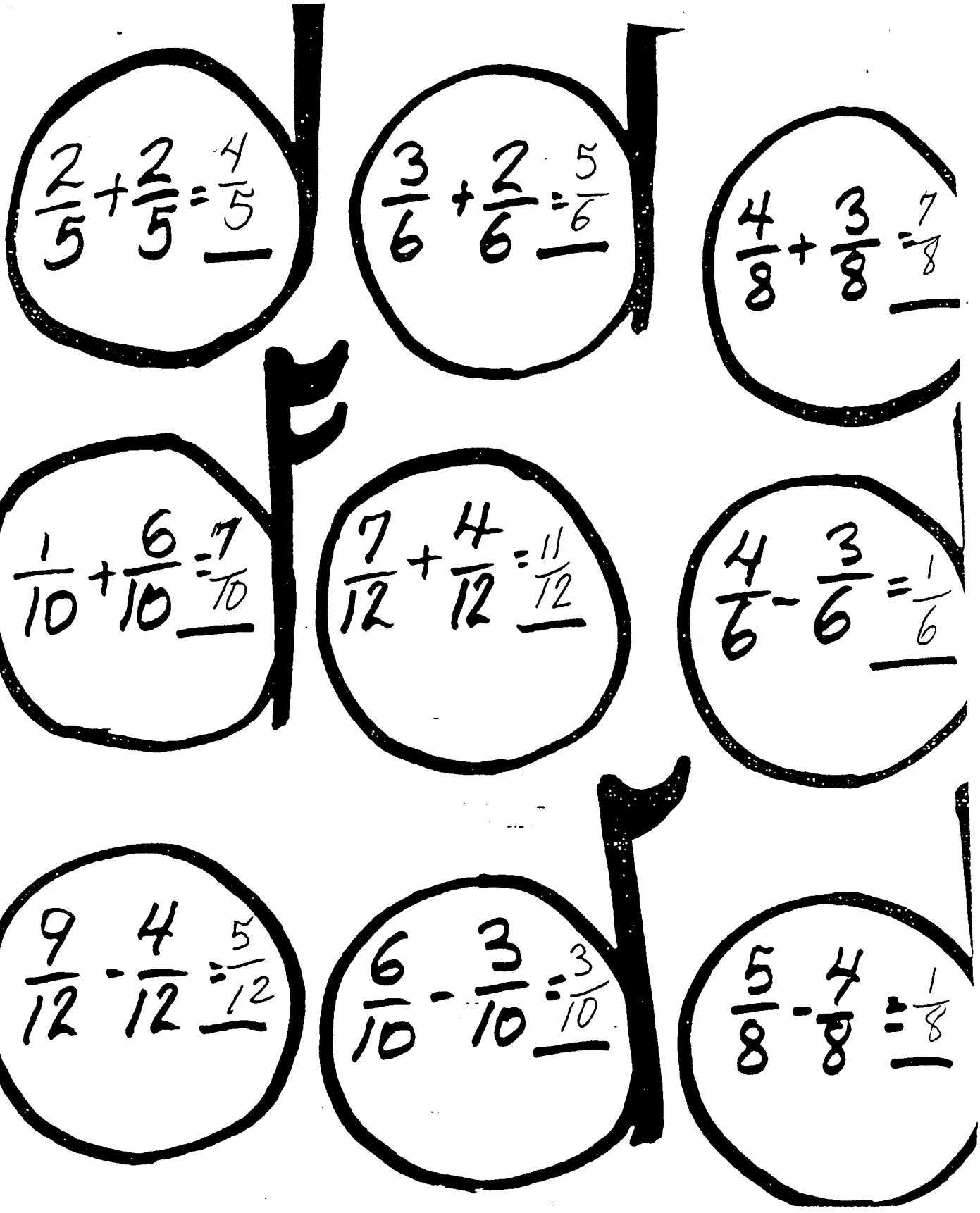
Add and subtract fractions. Use fractional circles to complete problems.



KEY NOTES!

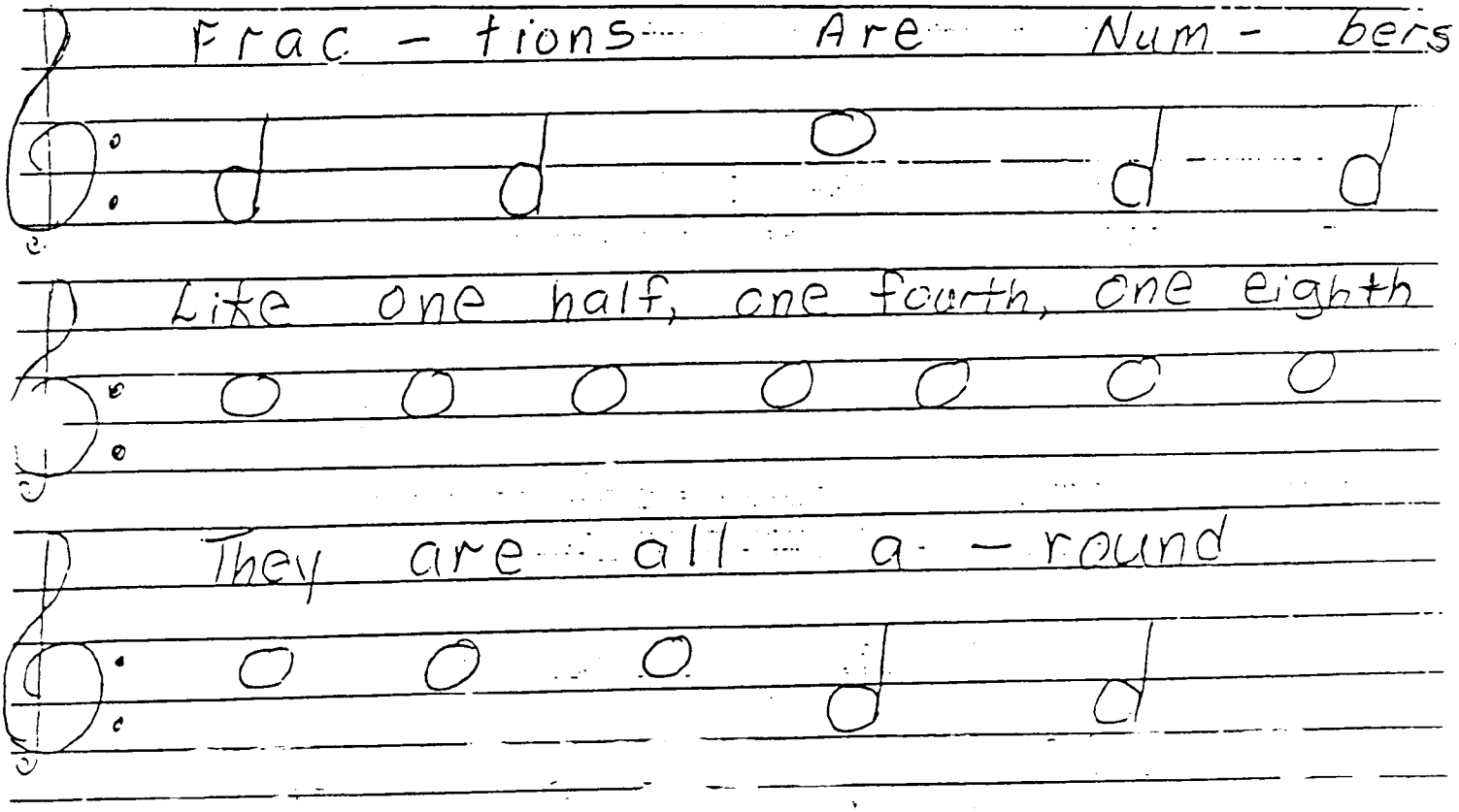
Teacher Resource #7

Add and subtract fractions. Use fractional circles to complete problems.



HAIKU FRACTION POEM

Teacher will demonstrate the Haiku Fraction Poem and apply appropriate musical notes for each word by counting syllables.



Students will use the key below to create a melody for their original Haiku Poem.

Key:

Whole note O = 4 beats = clap once and count to 4 (1-2-3-4).

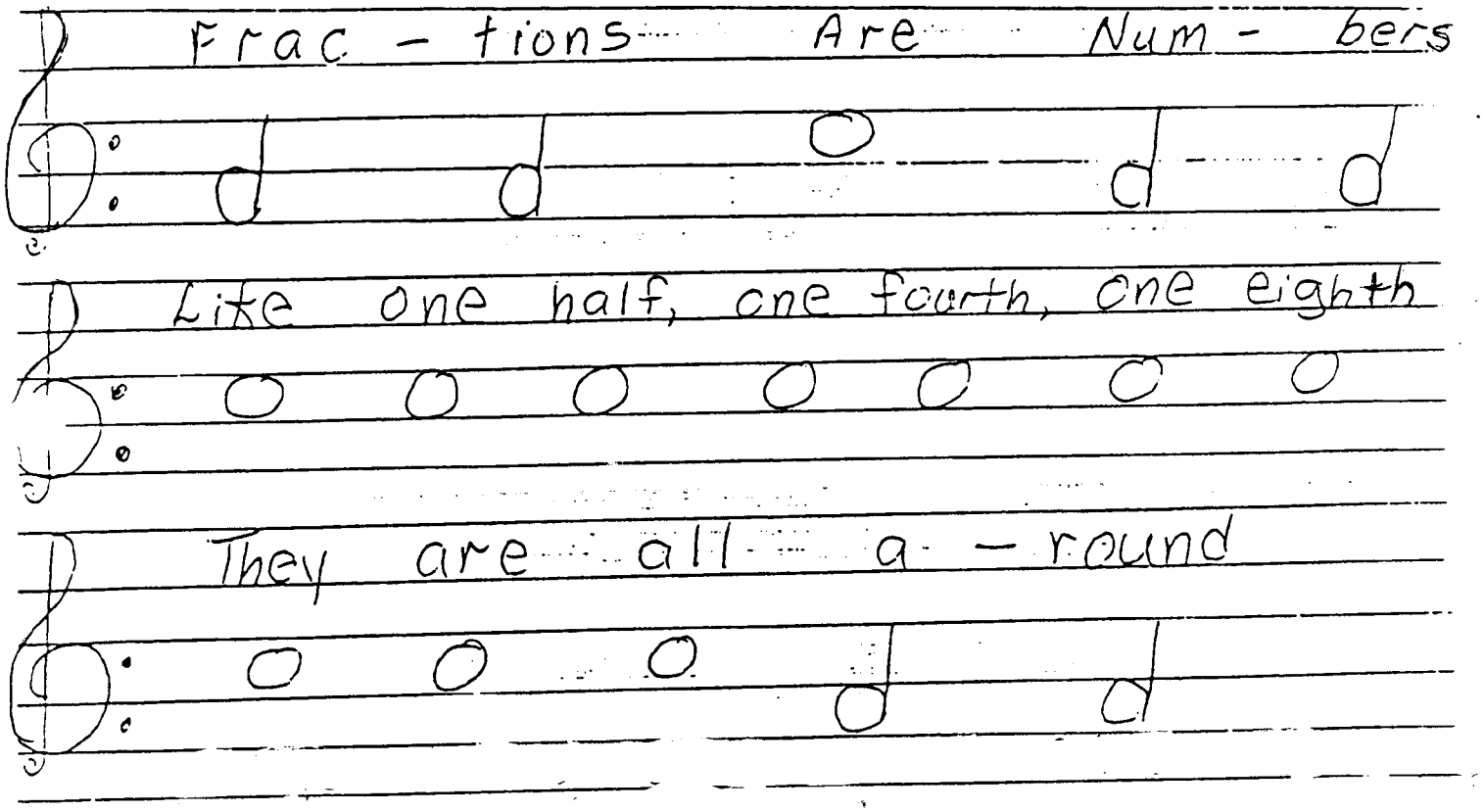
Half note 𝅗𝅥 = 2 beats - clap once and count to 2 (1-2).

Quarter note ♩ = 1 beat = clap once and count to 1 (1).

Eighth note ♪ = 1/2 beat = clap once quickly and count to 1/2 (1/2).

HAIKU FRACTION POEM

Teacher will demonstrate the Haiku Fraction Poem and apply appropriate musical notes for each word by counting syllables.



Students will use the key below to create a melody for their original Haiku Poem.

Key:

Whole note O = 4 beats = clap once and count to 4 (1-2-3-4).

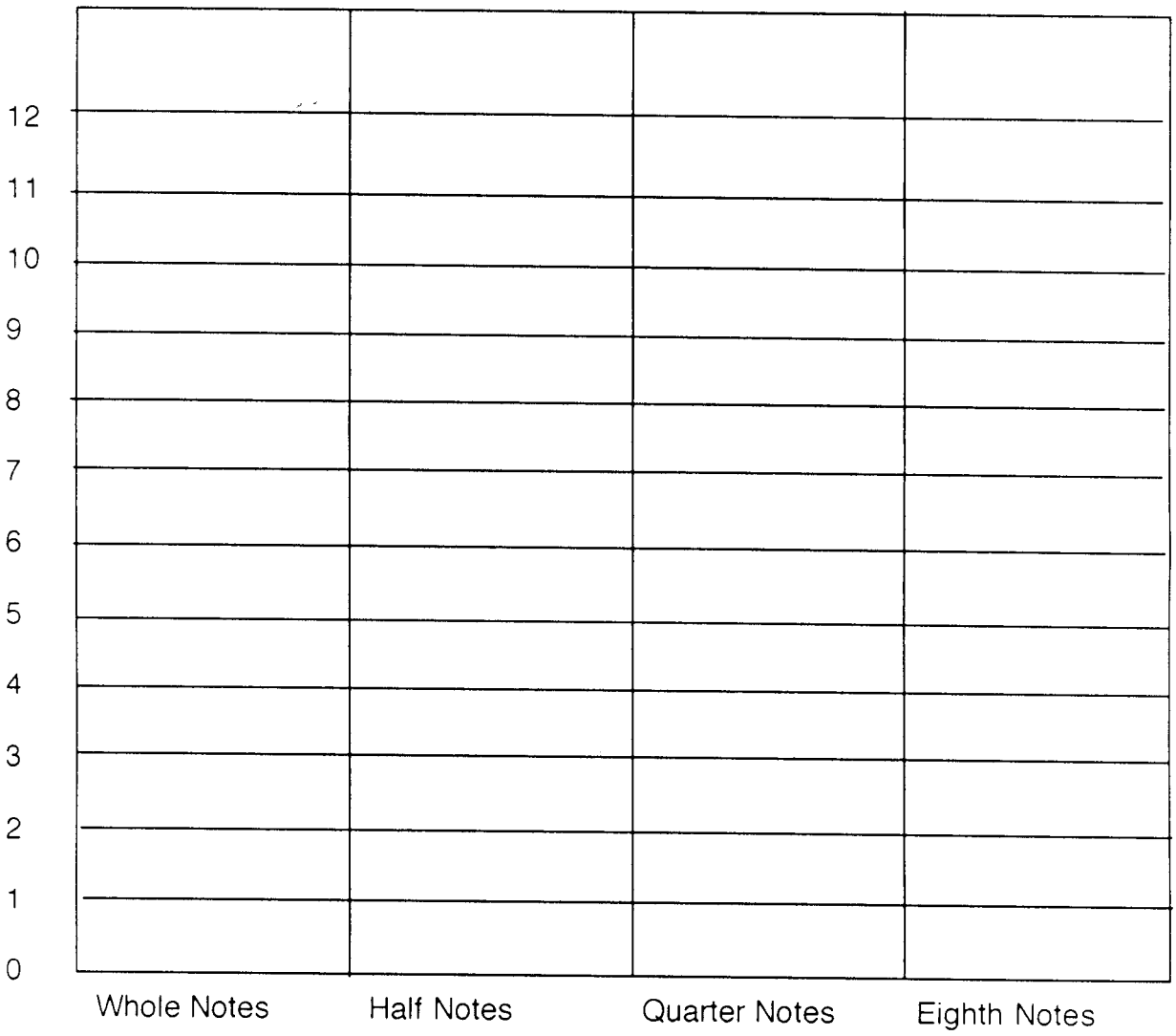
Half note $\mathcal{O}$ = 2 beats - clap once and count to 2 (1-2).

Quarter note ♩ = 1 beat = clap once and count to 1 (1).

Eighth note ♪ = 1/2 beat = clap once quickly and count to 1/2 (1/2).

FRACTION HAIKU GRAPH

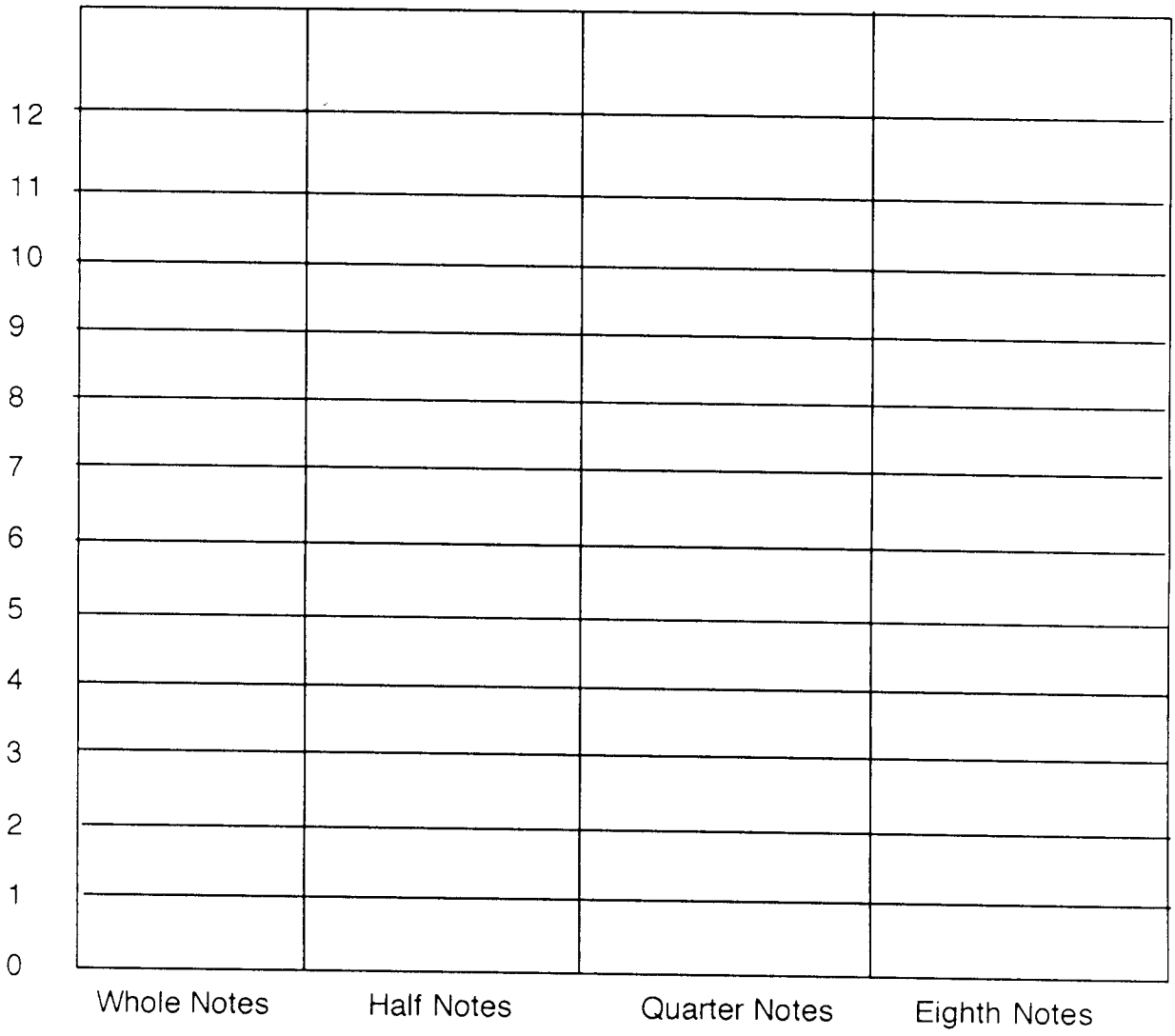
Directions: Count and graph the number of musical notes that you used in your musical score.



Name_____Date_____

FRACTION HAIKU GRAPH

Directions: Count and graph the number of musical notes that you used in your musical score.



Name_____Date_____

BULLETIN BOARD

KNOW YOUR NOTES!